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BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM

No. 44.

CATALOGUE OF THE LEPIDOPTEROUS SUPERFAMILY
NOCTUIDÆ FOUND IN BOREAL AMERICA.

BY

JOHN B. SMITH, Sc. D.,

PROFESSOR OF ENTOMOLOGY IN RUTGERS COLLEGE.

WASHINGTON:
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ADVERTISEMENT.

This work (Bulletin No. 44) is one of a series of papers intended to illustrate the collections belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

The publications of the National Museum consist of two series—the Bulletin, of which this is No. 44, in continuous series, and the Proceedings, of which the sixteenth volume is now in press. A small edition of each paper in the Proceedings is distributed in pamphlet form to specialists in advance of the publication of the bound volume.

The Bulletin of the National Museum, the publication of which was commenced in 1875, consists of elaborate papers based upon the collections of the Museum, reports of expeditions, etc., while the Proceedings facilitate the prompt publication of freshly-acquired facts relating to biology, anthropology, and geology, descriptions of restricted groups of animals and plants, the discussion of particular questions relative to the synonymy of species, and the diaries of minor expeditions.

Other papers, of more general popular interest, are printed in the Appendix to the Annual Report.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletin of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean (chairman), A. Howard Clark, R. E. Earll, Otis T. Mason, Leonhard Stejneger, Frederick W. True, and Lester F. Ward

S. P. LANGLEY,
Secretary of the Smithsonian Institution.

WASHINGTON, D. C., July 5, 1893.

Q A CATALOGUE,
BIBLIOGRAPHICAL AND SYNONYMICAL,
OF THE SPECIES OF MOTHS OF THE
LEPIDOPTEROUS SUPERFAMILY NOCTUIDÆ,
FOUND IN
BOREAL AMERICA.

WITH CRITICAL NOTES,

BY

Bernhard
JOHN B. SMITH, Sc. D.,
Professor of Entomology in Rutgers College.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.

P R E F A C E .

The basis of good work in any science is a knowledge of what has been done in the past. This proposition does not need argument for its support, and it follows, logically, that any work which facilitates the acquirement of this basic knowledge and brings together systematically and critically the results theretofore obtained will also facilitate the advance of the science. The study of the North American Noctuidæ has been seriously embarrassed by the difficulty in acquiring this foundation; not always because books were lacking, but often because the knowledge was contained in so many without an index to guide the student. Since Mr. Grote's catalogue of 1874 no comprehensive bibliographical work on this family has been published, while the number of species has nearly doubled and the literature has increased enormously. This state of affairs results in the formation of card catalogues or indices made by each student to facilitate his own work, and gradually he becomes familiar with the knowledge published by his predecessors. But this does not help others, and the same work is done over and over again by those engaged in the same fields of study. It has also been extremely difficult, even after becoming familiar with the literature, to ascertain exactly what species were really before the older writers. Characters now regarded as essential were not even noted by them and descriptions which, with the few species at hand, were characteristic and pointed became vague and indefinite when larger material brought us many and closely allied species. The greatest bugbear to American Lepidopterists has been the work of Francis Walker in the catalogues of the British Museum. Mr. Grote after twenty years of study in the Noctuidæ had failed to identify a large percentage of the species, while even of the species described by Guenée forty years ago, a number are still unidentified in American collections. For ten years I have been accumulating material for a monograph of the North American Noctuidæ, and have examined about all the books obtainable in Philadelphia, New York, Washington, and elsewhere, and have purchased papers on the subject whenever opportunity offered. I have had, during that time, unusual opportunities for studying the material in the leading American collections, and some of the results obtained have been published in my various "Contributions toward a monograph of the Noctuidæ of Temperate North America."

Some years ago it was contemplated by Dr. C. V. Riley and myself to issue a complete monograph of this family, giving all that could be learned of the early stages as well as the more strictly systematic work, and for several years a great deal of material was gathered. It is to Dr. Riley that I owe a very large part of the facilities for study in the scattered collections, and my sincere gratitude is due to him for his many kindnesses of all descriptions. Pressure of more imperative duties compelled Dr. Riley to abandon his part of the work, and I have gradually published such portions as were completed.

With the knowledge to be obtained in American collections, the necessity for studying the material contained in those of Europe, and especially that in the British Museum, became constantly more obvious. In September, 1891, it became possible for me to get away for a few weeks, and in the interest of the United States National Museum under instructions from the assistant secretary of the Smithsonian Institute in charge of the Museum, I carefully studied parts of the collections contained in the museums at London, Paris, and Berlin, and visited also the Standinger collection at Dresden.

The notes made by me during this trip are incorporated in the following pages; but a brief statement of the character and condition of the collections examined may not be amiss.

The British Museum contains of American Noctuidæ the material collected by Doubleday and worked over by Guenée in 1852, and by Walker between 1856 and 1858; the material from all other sources worked over by Walker during the same period; the Zeller collection and the Grote collection, besides the miscellaneous accumulations from all sources, including a very interesting lot collected by Lord Walsingham. The Doubleday material is in large part provided with locality labels, but it also contains specimens purchased by him, the fatherland of which is more than doubtful. Guenée has in some instances written "New Yorck," where nothing on the insect nor in the record will authorize it. It is in most cases easy to identify the specimens described by Guenée, though not all of them have labels in his handwriting. Walker had, in addition to the Doubleday material containing the Guenée types, a lot of material collected in Nova Scotia and in the British Possessions in North America. Some of the Abbot material is also in the collection. Mr. W. F. Kirby says (Can. Ent., xx, 231), "There are a number of specimens originally collected by Abbot in the British Museum and probably in other collections," and this is borne out by the fact that some of the specimens seen by me are evidently the originals of the figures contained in the magnificent collection of Abbot's drawings in the Museum. Among them are such rarities as *Cossus basalis* Wlk. (*Inguromorpha slossoni* Hy. Edw.), and *Acherdoa ferraria* Wlk. (*Varina ornata* Neum.), both of them only recently rediscovered and redescribed. The figures of these species are exact copies of the specimens furnishing Walker's types, though the Museum record gives no clue to the source of the specimens.

Much of the material described by Walker is in very poor condition, and it required a very thorough knowledge of the American fauna to identify the species in all cases. Walker's method, according to Butler (*Journ. Linn. Soc., Zool.*, Vol. XII, pp. 402 and 432), and personal statements to me, was rather peculiar. His habit was to pin into a box, in series, as many specimens as it would conveniently hold, and then begin describing. At the end of the day's toil the box would be closed without indication of what had been accomplished, and next morning work would be recommenced from recollection of what had been previously done. None of the specimens were labeled until the descriptions were in type, and then, using a proof sheet, the printed names were cut out and pinned below the series of specimens, not on the insects themselves. Sometimes it happened that there were more names than insects; in such case the label was pinned into the box and, occasionally, the record "type lost," was made. Thus, sometimes two of Walker's names may refer to the same specimen as well as to the same species, and it is not always easy to ascertain when this is so. Judging from the fact that sometimes the descriptions do not in the least fit the specimens labeled, there is reason to believe that no great care in applying the names was exercised.

Messrs. Grote and Robinson, and afterward Mr. Grote alone, have examined the Walker material and have identified many of the species. In 1887 Dr. Riley looked over the material carefully and secured colored figures of many of the species theretofore unrecognized. These figures and the notes accompanying them, Dr. Riley has kindly loaned me and they have been of assistance to me in a number of instances. Mr. Butler has, recently, in rearranging the collection, published the synonymy of some others of the Walker species. Mr. Grote seems never to have spent sufficient time at the work to get more than a few scattering notes, and most of these seem to have been made without material for comparison and from recollection merely. Yet most of them are correct. Mr. Butler's knowledge of our fauna is altogether too slight to make his notes conclusive in the case of obscure species. Critical or synonymical notes should never be made except upon careful study and comparison by a specialist or one fully acquainted with the fauna concerned. Justice to an author requires that his writings be studied before relegating his species to the synonymy, and if neither time nor opportunity for such study exists, it is simply adding confusion to ignorance to make synonymical notes on superficial comparisons.

Mr. Henry Edwards has also on one or more occasions examined portions of the Museum collections, but seems never to have made any systematic study. He has informed me in conversation that he had notes on many of the Bombycids which he intended to put into shape for publication; but his untimely death prevented this.

The new arrangement of the noctuids in the British Museum is utterly at variance with accepted standards. Mr. Butler's generic associations

embrace species of *Hadena*, *Mamestra*, *Teniocampa* and others under one term, while closely allied species may be widely separated under different generic names. Mr. Butler has not, to my knowledge, given any key to his classification, and criticism is therefore impossible. I wish simply to call attention to the fact that in this collection the arrangement of the species is on a unique basis, and that few of the generic associations are pure, according to German, French, and American definitions. Judged by these standards the arrangement is an utterly unscientific hotchpotch. In the course of this rearrangement, Mr. Butler has united the Grote and Zeller material with the old collection, forming one series. The Walker types are ascertained and the printed label associated with the specimen is placed on the pin. If the Walker name has priority, a "type" disk is pinned next to it. If the name is a synonym, the "type" disk is put on the pin with the insect and with the printed label. In all cases where the type of a species is in the series a "type" disk next the specimen calls attention to it. This greatly facilitates the search for species, and my task was considerably lightened by my ability to compare the Guenée, Walker, and Grote types side by side. Mr. Butler has published critical and synonymical notes on the species so far as arranged, much the greater part of them in the "Entomologist," since my visit to the Museum. In the majority of instances the associations are correct; but much of the synonymy given was already known, and in that which is new there are some bad errors, caused by the failure to compare structural characters and relying only on an apparent, superficial resemblance. But many species were yet left unidentified with the other American material. In those parts of the collection not yet arranged, the work was more tedious and involved more labor. There was an advantage, however, in the fact that the arrangement was according to Walker's catalogues and it was thus easy to find the specimens, little as the association might be warranted. Mr. Butler in his rearrangement seems to have preserved, as far as possible, every original label that would indicate or aid in identifying a type and has additionally marked those specimens that he considers as such.

I thus made my studies under exceptionally favorable circumstances. The Grote collection is really the basis of the nomenclature in American collections generally, and a very great point was gained when I could identify the Guenée and Walker names with the Grote names for the same species. In addition, I had with me a small series of specimens generally unnamed in collections, or of which I was doubtful, and these were carefully compared. A full set of my own monographic papers enabled me to verify the correctness of the identifications there made, and a series of notes and drawings aided me in other groups. In the Deltoids I had drawings of nearly all the species as they are named in the National Museum, and these were carefully compared and the synonymy noted. I think I can claim a familiarity with a very large

percentage of the American species, and I could thus readily determine in most instances whether or not I correctly knew the insects. As my time was limited, I did not study *Acronycta*, which Dr. Riley had already studied on a prior occasion, nor *Catocala*, which Messrs. Grote and Henry Edwards had compared. Outside of these genera I found all save four or five of the Walker species, and was able to recognize nearly all of them. Of those not found, Mr. Butler has seen no trace as yet, and they may be "lost." Some few, I believe five species, described by Mr. Walker, from the Saunders collection, now at Oxford, are yet unknown to me, as I could not get to that city.* The species described from Dr. Bethune's collection I have previously identified, and the types are now in the National Museum. In Vols. v and vi of the Canadian Naturalist and Geologist, Mr. Walker described a few species collected by Mr. D'Urban, and afterward donated to the Entomological Society of Ontario. These Mr. Grote has examined, and most of them were identified with other described species; the others were omitted from all of Mr. Grote's lists, and were forgotten. To the kindness of Mr. J. Alston Moffat, curator of the Society, I owe an opportunity of examining these species, and have identified them in the following pages.

I desire at this point to express my sincere thanks to Mr. Butler and to the entire Entomological Staff of the British Museum, for the ready courtesy and great kindness with which they gave all aid in their power to facilitate my work. A regrettable attack of illness confined Mr. Butler to his home during most of my stay, else I might perhaps have succeeded in finding a trace of the few yet unidentified species. I do not at all agree with Mr. Butler's ideas on Noctuid genera, yet this does not prevent a high appreciation of the work he has done, nor a feeling of sincere gratitude for the good-natured readiness with which he gave me all the assistance in his power.

A knowledge of the collections now in the British Museum is the basis of our knowledge of the North American Noctuidæ to-day.

Some of the species described by Guenée are in the Jardin des Plantes in Paris, and this I also visited. The museum and the collections there were a distinct disappointment. Not only is it cooped up in numerous small rooms, packed in inconvenient places, but for years past it seems to have had little or no attention, and there is apparently no pretence of arrangement. Yet with the kind assistance of M. Aug. Sallé, I did succeed in getting at most of the species marked "M. N.," in the species Général. I was in hopes of being able to get track of the Abbot drawings, from which Guenée described a number of species; but I did not succeed in this. It was a matter of great regret to me that I did not spend the time devoted to Paris, in visiting M. Oberthür at Rennes; but I did not realize how little there was of importance, at Paris, and how much there was at Rennes. The brief time at my disposal made it impossible to repair the error and I went on to Berlin.

* I have since, by the kind assistance of Mr. Wm. Schaus, identified three of them.

Here again I found a well-preserved and well-arranged collection, not particularly rich in North American species, but with many South American forms valuable for comparisons, generic and otherwise, and with a considerable number of arctic forms, including some of Dr. Staudinger's types.

I owe thanks here to Dr. Karsch for his obliging courtesy in giving such assistance as I asked. In fact, the most pleasant and agreeable features of my trip were the hearty coöperation I met with everywhere and the ready willingness to aid, by any means in their power, that distinguished all those having charge of the collections I desired to see.

The trip to Dresden was a distinct disappointment. Dr. Staudinger was not in town, and the Moeschler collection had not been acquired by him as I had been informed it had. Mr. E. Bang-Haas did all in his power by showing me such northern material as had been studied by Dr. Staudinger; but this was a poor substitute for what I had expected or had been led to expect. My leave of absence was then about exhausted and I returned to America via Bremen.

In preparing the notes made in the European collections I found that it would be necessary to refer to the greater part of the described species, and after consulting with Dr. Riley, I concluded to prepare a catalogue embodying not only my notes on the types in foreign collections, but also on those in American collections. My aim is to give, as nearly as may be, the present location of the type specimen of every noctuid species described from America since Guenée wrote.

This necessitates a reference to some of the American collections containing types. Of the individual collections, by far the most important is that of Mr. B. Neumoegen, of New York city. Mr. Neumoegen has succeeded in accumulating a very large amount of valuable material, mainly from the Western States, and this has been in large part named by Mr. Grote, Mr. Henry Edwards, and more recently by myself. He has the types of 233 or about 13 per cent of our species; not always unique types, but specimens so marked.

Next in importance is the collection of the late Henry Edwards, also of New York city. Mr. Edwards described many species from his own collection and furnished specimens for a considerable number of the species described by Messrs. Grote and Harvey. A large part of the value of Mr. Edwards' collection is derived from the fact that he personally collected a very great portion of it, and that it is labeled with the exact locality of capture and not merely with a State label. This collection has been acquired for the American Museum of Natural History in New York city, and will be, when in place there, a most valuable one for the student.

The collection of Mr. Fred Tepper, of Brooklyn, now the property of the Agricultural College of Michigan is next in rank, containing 114 types, many of them described by Mr. Morrison, and some of them duplicating the "types" in other collections.

The Strecker collection at Reading, Pa., contains a considerable number of types; not only all that were described by Dr. Strecker himself but also some of those described by Mr. Morrison and Dr. Behr.

At some distance behind are the collections of Mr. E. L. Graef, of Brooklyn, N. Y.; Dr. Roland Thaxter, of Cambridge, Mass.; Dr. J. A. Lintner, of Albany, N. Y.; Dr. George D. Hulst, of Brooklyn, N. Y.; Mrs. C. H. Fernald, Amherst, Mass., and the collections of Dr. James Bailey and Mr. W. W. Hill, both of Albany, N. Y., deceased.

I owe thanks in each case to the owners of the collections above named for courtesies extended to me and in some cases for lists of the types contained in the collections; all of which are incorporated in the following pages.

Perhaps a few words concerning "types" may not be entirely out of place right here. Dr. Hagen holds that every specimen named by an author of a species described by himself, is a type. Mr. Morrison was yet more liberal and marked as "type" a number of specimens of species described by Mr. Grote, having presumably compared them with the actual type. Mr. Grote's practice seems to have been to mark all specimens before him when writing his original description, as "type," and I think Mr. Grote is right. It is the sum of the characters of the specimens before the describer that makes the species, and though neither may be the type of *all* the characters, yet all are types of the species. There are thus instances where types of Mr. Grote's species are in two or more collections. This is more especially true of the species described in his earlier and most recent writings; the first, presumably, because of the greater dependence for material upon individual collections; the second after the sale of his collection, when he gave away most, if not all, the material received. In the case of my own species "types" are often even more widely distributed. I deem it a positive advantage to have types in several collections, but I would name nothing a type which came to hand after the original description was written.

The Bailey collection is now in the hands of Dr. T. P. Bailey, son of Dr. James Bailey, by whom the collection was made. It has more types than I have noted; but my notes on the collection are scant and were made several years ago. The W. W. Hill collection is in the care of his family, and is for sale. It contains comparatively few unique types, but is valuable from the long series of specimens accurately labeled with the exact locality and usually also with the date of capture—a very treasure to the student. Dr. Lintner's collection is valuable for much the same reason. From these collections Mr. Grote obtained much of the material from which he described, and the returned specimens while not often marked "type" except in the early days, are yet typical in that they formed part of the material on which the species was based.

Dr. Thaxter has collected extensively in Massachusetts and Maine

and to a less extent in Florida. These collections furnished types for many species described by Mr. Grote, and of which Dr. Thaxter has duplicates. His material is thus largely typical while not often marked "type." The collections made by Mrs. Fernald at Orono, Me., are in much the same case. She furnished the material for a number of new species to Messrs. Grote and Morrison, but has few "types."

The Graef collection contains many rarities collected years ago, when Mr. Grote first began his studies, and contains also a share of the material collected by Morrison. A very great proportion of the species were determined by Mr. Grote, and the specimens often form part of the material from which the descriptions were made.

The Hulst collection, now in my charge at Rutgers College, is especially rich in *Catocalæ*, typifying Dr. Hulst's work in that genus, and it contains types also in several other genera.

Prof. F. H. Snow, of Lawrence, Kans., has types of a few species, but furnished the material for a considerable number of descriptions. His New Mexican material was all named by Mr. Grote and is typical of three papers on New Mexican moths.

Prof. George H. French, of Carbondale, Ills., has types of a few species described by himself and there are a few other types scattered in various collections.

Mr. David Bruce has collected extensively in Colorado and his collections have furnished types of a considerable number of species, most of them described by myself. Most of these types are not in Mr. Bruce's collection; but I have so labeled some of the material returned to him, where it formed part of the original lot from which the descriptions were made. The determinations of my own species in that collection are nearly all made by comparison with the original types.

Of Institutions containing noctuid types, the Agricultural College of Michigan contains the Tepper collection already mentioned. A few type specimens are in the Cornell collection at Ithaca, N. Y. Rutgers College has the Hulst collection and types of some of my species. The Hy. Edwards collection is in the American Museum of Natural History.

In the collection of the American Entomological Society of Philadelphia are a number of types of the species described by Messrs. Grote and Robinson, and also of some described by Mr. Grote alone. In the Canadian Entomologist, iv, 109, Mr. Grote writes concerning the work by Mr. Robinson and himself: "The collection on which these and all our other joint entomological writings were based, is now in the possession of the American Entomological Society." If that was true in 1872, it certainly is not so now, because but a very few of the species are at present in that collection. Of these, a very small proportion only have a written label. Some have a little printed "type" label; but nothing to indicate of what it is the type. In at least two cases I found these "type" specimens under names with which they had no possible relationship. Fortunately the excellent figures given in illustration of the

papers referred to, make it possible to ascertain the names of which the specimens are typical. But many species have disappeared, leaving no trace; in whose hands they are at present I have been unable to ascertain. Mr. Grote, in the third and fourth volumes of the Transactions of the American Entomological Society, published a number of descriptions referring to the types as in this same collection. Most of these also have disappeared except in the Deltoids where nearly all are present, properly labeled. Here, however, museum pests have been at work and some of the specimens are in a very precarious condition. I have compared many specimens to get a duplicate series as nearly as possible resembling the originals. This series will be deposited in the United States National Museum, when completed. But Mr. Grote's statement, above cited, was too broad. I think he must have intended to refer to the Noctuids only, for, certainly, many of the types in other families are in the American Museum of Natural History, New York city.

In the museum of the Boston Society of Natural History is the Harris collection, containing a considerable number of specimens labeled by Harris himself. There are also a few of Mr. Morrison's types in the collection.

At Cambridge, in the Museum of Comparative Zoölogy, are most of the types of Dr. Packard's species described from Labrador. These were originally in the Museum of the Peabody Academy, at Salem, where I first saw them, and they were then in a sadly fragmentary condition, and on the high road to complete destruction. Their transfer to Cambridge was a decidedly wise move, and when I last saw them there they looked much better and bid fair to last for some time to come. A carefully compared set of specimens is a desideratum. For his work on the North American Lepidoptera, Zeller derived a considerable portion of his material from this collection, and most of his noctuid types are here. A few Grote and Morrison types are also deposited here.

The collections in the U. S. National Museum are very rich in noctuidæ, but have comparatively few types of the older authors. A small number of the Walker types were donated to the museum by Dr. C. J. S. Bethune, at my request, in 1891. All of Dr. Riley's species are represented in the collection, forming part of his gift to the museum, and in that collection were also a few Morrison types. Morrison's types, it will be noted, are everywhere. The collection originally formed by myself was purchased by the museum, and contained types of a few species described by myself, and of a number of species described and given me by Mr. Grote after the sale of his collection to the British Museum. In the Meske collection, now also in the museum, there are a few types by Grote, Harvey and Lintner, while it also contains nearly the same series of species to be found in the other Albany collections previously mentioned. The Belfrage material purchased for the museum

contains no types, but it contains a duplicate series of many of the Texan species described by Messrs. Grote and Harvey, often under the exact label in number and color mentioned in the characterization of the type.

Of the species more recently described by myself, the museum contains a large proportion of the types. It has been my effort to place, so far as I could do so, the types of all my species in this museum, and to make it, for the future American students, as nearly typical and complete as possible. My various contributions toward a monograph of the noctuidæ are based on this collection, and the collection is arranged and named in accord with my published work, which it thus typifies. In the American noctuidæ this collection is, in the quality of material, the length of series, the localities represented, and range of variation shown, by far the best in the country or even in the world, for the British Museum series is very much poorer in specimens, though incomparably richer in types.

With the above explanation, the references to the location of types made in the following pages will be easily understood.

As already indicated, my systematic work necessitated the formation of a card catalogue. As a starting point I adopted Mr. Grote's bibliographical list of 1874, and transferred it to cards, adding subsequent references from time to time so as to keep it up to date. Naturally enough I followed Mr. Grote's plan at first and noted neither the date of the publication nor the dates of flight, even when given. Localities were indicated only in the most general terms. I soon found that I could not rely on the accuracy of Mr. Grote's references in all cases, and that there was no pretence of completeness in the bibliography. Occasionally only the name of the publication and page were given and neither volume nor year. I have therefore, in almost every case verified the references given, and where I have copied bibliography and synonymy without verification I have generally stated that fact. In spite of all care I can not hope to have escaped errors. Every reference has been transcribed from original note to card and from card to manuscript, and finally transferred to type. This leaves a margin for error, and although I have in the great majority of cases verified the reference to original description from the manuscript, errors may have crept in and may have been overlooked.

The omission of dates of publication in my original cards made it necessary to go over every reference to make the addition and here I found Dr. Hagen's "Bibliotheca" invaluable. Yet the dates given of some of the older works issued in parts can be considered as approximate merely. In most cases this is of little practical importance, and where it is, I have gotten as close to the truth as I could. Some of these works bear the date of the preface or title page while the body of the work may not have appeared for some years afterward. Hübner's Verzeichniss is dated 1816 and contains references to the noc-

tuidæ in the second hundred of the Zuträge which, according to Mr. Grote in Can. Ent., XIII, 92, was published in 1823. Now, either the references were published from five to seven years before the descriptions and plates appeared or the Verzeichniss was not published until long after its date. In view of this fact and the fact that the entire first hundred of the Zuträge is referred to, no earlier date than 1820 can be reasonably assumed for Hübner's list. This makes it long subsequent to Ochsenheimer's Systema Glossatorum, also dated in 1816 and, I believe, actually published about that time. Yet I have cited 1816 as the date of the Verzeichniss in most cases where it conflicts with no other reference. Usually the dates given by Dr. Hagen have been accepted as controlling.

In citing references from society publications I have used the date given on the printed forms, even where I was well assured that the date was later, wherever this method would not involve the question of priority. The noctuidæ have been singularly fortunate in offering a very few cases only in which there could be any serious doubt as to which name had priority. In 1874 and 1875, when Messrs. Grote, Morrison, Harvey, and Strecker were publishing at about the same time, several species were twice described, with narrow margins between the dates of publication; but these margins were at once fixed and no confusion resulted. In a number of cases Mr. Grote has duplicated descriptions in separate journals, each description purporting to be that of a "n. sp." Thus, descriptions in the Bull. Bkln. Ent. Soc. are duplicated in the Canadian Entomologist, while descriptions in that journal are duplicated in the Bull. Buff. Soc. Nat. Sci. As this duplication occurred mainly at about the date Mr. Morrison was describing, I assume that it was intended to secure two chances of priority.

In citing localities to show geographical distribution, a variety of difficulties arise. Few species are so evenly distributed as to occur in all parts of any large region, and yet, in giving the geographical range in a work of this character it is practically impossible to give details even when ascertainable. Many of our States afford varieties of surface, of climate and of geological formation that support quite different sets of moths. To cite "New York," for instance, does not indicate that the species occurs all over that State. Many species are found on Long Island that are not found at Albany, while the Albany region affords many peculiar forms not thus far duplicated elsewhere in the State. The Catskill and Adirondack regions each have forms peculiar to themselves, while along the northern and western boundaries of the State still other forms occur. Most of the other States are in much the same case, and in some the matter is more serious. Texas has two quite distinct faunal regions, one of them giving the normal Atlantic forms, the other extending into New Mexico and Arizona, and giving quite a distinctive set of species. Colorado has a surprisingly varied fauna, as will appear in the following pages. Yet a citation by

States or by groups of States has been the only one feasible. A species may occur in New York, Pennsylvania, Massachusetts, Vermont and Maine, and only in one or two localities in each; yet the entire geographical group will be cited. I have endeavored, however, to specify as much as possible in a work of this kind. By such expressions as "Canada to Texas to Colorado," it is intended to indicate that between these extremes the species has been recorded from most of the States. The term "Canada," as here used, includes the Provinces of Ontario and Quebec, other British possessions being cited as published or labeled. Finally, I have reason to believe that the "East Florida" of the British Museum list may mean Texas or Georgia as often as what is now known as Florida.

The sources for the localities given are the original descriptions, lists published by Lintner, Thaxter, Snow, Van Duzee, Hill, Mrs. Fernald, and others, in the entomological journals and elsewhere, a very complete list of species taken in Colorado by Mr. Bruce, the collections at Rutgers College, and in the National Museum, and the duplicate lists of species named by me for correspondents for several years past. The dates given are from the same sources, the National Museum collection being especially well labeled in the Californian and Texan series.

My studies in the noctuids have been almost exclusively systematic, and the references made by me on the cards were such as would facilitate my work in that direction. I have included all references to descriptions of early stages, habits, etc., found in the entomological and scientific journals or publications, but have not searched economic literature. This latter has grown to such enormous proportions in recent years that it merits a separate index, and there is so much repetition, so much compilation, and so much duplication that to include the matter here would have extended the work unnecessarily. Mr. Henry Edwards in his catalogue of the described early stages of Lepidoptera, Bulletin No. 35 of the National Museum, has covered this ground fairly well, and I have not recognized the necessity of duplicating all his references.

The only exceptions made are that I have cited Dr. Riley's Missouri reports, some of Dr. Lintner's reports, and the volumes of the Entomological Commission; the first and second of these because they contain descriptions of new species, and in the case of Dr. Riley's reports, excellent and characteristic figures: the latter because the treatment is scientific and monographic, containing exhaustive treatises on all phases of structure, habit, and development.

Bulletin 35 of the U. S. National Museum should be, therefore, bound with the present work to complement and complete it.

Our literature contains a large number of notes on species, giving no new or useful information and of merely local interest. References to these have been omitted. The object has been to give: (1) The place of original description; (2) complete redescriptions; (3) additions to

the knowledge concerning the species; (4) the changes made in generic location. Under this latter head I have not included references to such lists as adopt a different generic term for an entire genus, *e. g.*, Mr. Grote uses *Apatela* and *Heliophila* for *Acronycta* and *Leucania*; but I have not cited his lists for this change in term since it does not carry with it any suggestion of difference in structure. Where a species appears in the catalogue in a genus different from the one last cited, the reference is usually to be credited as original here or in my list of the Lepidoptera of boreal America, published in 1891.

In synonyms the same rules are observed, because the literature of the synonym is often better or more accessible than that of the original species, and the final reference given is that which places the name as a synonym. Usually I have given a reference only to the first positive statement of the synonymy; but where more than one observer have independently so referred a name, I have as a rule cited them all. Where no reference to the synonymy appears in the bibliography it is original here.

Finally, while I have given the reference to the original descriptions of the genera, I have not given generic synonyms nor references to redescriptions of a genus. The generic synonymy appears sufficiently in the bibliography of the species, while redescriptions will be readily found under the same references. I have made no attempt to specify the "types" of genera, for opinion differs in many cases in which I have made no original study of the matter, and I do not care to adopt or reject conclusions without some verification. Usually Mr. Grote has been followed except in his use of certain Hübnerian genera. I do not think that under the utmost latitude the Tentamen should be considered authority for a generic term, while the Verzeichniss names so far as applicable must be used eventually. It follows from this that in some cases older generic terms may have to be substituted for those now in use; but I think such cases will not be great in number.

With this somewhat lengthy explanation of the origin and purpose of the catalogue I submit it to the consideration of lepidopterists generally.

All the species contained in the National Museum collection are marked with an asterisk (*). I hope that those who have species not so marked, in duplicate, will send specimens to complete the collection for the benefit of students generally. The advantage of a central, complete collection accessible at all times, constantly cared for, the property for all scientific ends of students generally, can not be overestimated.

JOHN B. SMITH.

RUTGERS COLLEGE, April 5, 1892.

6048—No. 44—2

INDEX TO AUTHORS AND WORKS CITED.

Only those works of an author cited in the catalogue are here noted. Works published in the Proceedings or Transactions of an Institute or Society are cited from the society's publication in most instances, and only rarely by the title of the memoir. Under the name of each author is given a list of his books here cited. Names which have no such lists appended, represent authors that have published on American Noctuidæ in periodical, society, or institute literature only. Periodical, society, and institute literature is indexed by the first word of the usual abbreviation. Separate works are found only under the name of the author and are not independently indexed by their usual abbreviation.

So far as it goes, Hagen's *Bibliotheca Entomologica* has furnished dates and titles; more recent works are in most cases given from my own notes. The dates given are of the beginning and end of works issued in parts, or those given on the title page of others. Periodical literature is not dated here, the date of the volume or part cited being always given in the catalogue.

SIGNS USED.

*Specimens are in the National Museum collection.

{Name cited in error.

[Name preoccupied.

AMER. ENT. The American Entomologist: An illustrated magazine of popular and practical entomology. New York.

AM. JOURN. SCI. Silliman's American Journal of Arts and Sciences.

AMER. NAT. The American Naturalist: An illustrated magazine of natural history. Philadelphia.

ANDR. Andrews, W. V.

ANGUS, James.

ANN. LYC. NAT. HIST. N. Y. Annals of the Lyceum of Natural History in New York. Published by the society.

ANN. AND MAG. NAT. HIST. Annals and Magazine of Natural History. London.

ANN. SOC. ENT. BELG. Annales de la Société Entomologique de Belgique. Bruxelles. Published by the society.

ANN. SOC. ENT. FR. Annales de la Société Entomologique de France. Paris. Published by the society.

AN SP. DIST. A distinct or good species: not a synonym.

BAILEY, Dr. James.

BATES, J. Elwyn.

BDV. or BOISD. Boisdual, Jean Alphonse.

IC. HIST. DES LEP. Icones historiques des Lépidoptères d'Europe, nouveaux ou peu connus. Paris, 1832-1843.

FN. ENT. MADAG., LEP. Faune entomologique de Madagascar, Bourbon et Maurice, partie des Lépidoptères. Paris, 1834.

GEN. ET. IND. METH. Genera et Index methodicus europæorum Lepidopterorum, Paris, 1840-
IND. METH. Europæorum Lepidopterorum index methodicus. Paris, 1829.

BEAN, Thomas E.

BEAUV. Palisot de Beauvois, A. M. F. J.

INS. AFR. ET AM. Insectes recueillis en Afrique et en Amérique dans les royaumes d'Oware. Saint-Domingue et dans les États Unis pendant les années 1781-1797. Paris, 1805-1821.

BEHR, Dr. Hermann.

BEHRENS, James.

BERLIN. MAG. Berliner Magazin.

BETH. Bethune, Rev. C. J. S.

BEUT. Beutenmüller, William.

BKH. See BORKH.

BORKH. Borkhausen, Moriz Balthasar.

NATURO. EUR. SCHMETT. Naturgeschichte der europäischen Schmetterlinge nach systematischer Ordnung. Frankfurt, 1788-1794. Nocturne in Vol. IV, 1792.

BRACE, John P.

BREHME, H. H.

BULL. BKLN. ENT. SOC. Bulletin of the Brooklyn Entomological Society. Published by the society, 1877-1884.

BULL. BUFF. SOC. NAT. SCI. Bulletin of the Buffalo Society of Natural Science. Published by the society, Buffalo, N. Y.

BULL. CAL. AC. SCI. Bulletin of the California Academy of Sciences. Published by the academy, San Francisco.

BULL. GEOL. SURV. Bulletin of the United States Geological and Geographical Survey of the Territories, Washington, D. C.

BULL. U. S. NAT. MUS. NO. 38. Bulletin of the United States National Museum, No. 38. Washington, 1890. Revision of Agrotis.

BUNKER, Robert.

BUTLER, Arthur G.

CANADIAN JOURNAL, The. Published in Toronto. New series, Vol. XI, 1865 is the only volume cited.

CAN. ENT. The Canadian Entomologist. Published by the Entomological Society of Ontario at London, Ontario.

CAN. NAT. AND GEOL. The Canadian Naturalist and Geologist, Montreal.

CAULFIELD, F. B.

C. B. MUS., HET. Catalogue of the Lepidoptera Heterocera in the British Museum, 1856-1868. Forming Vols. IX to XXXVI of the Lepidoptera.

CLEM. Clemens, Brackenridge.

CLERCK, Carl Alexander.

ICONES. Icones insectorum variorum cum nominibus eorum trivialibus locisque e C. Linnæi syst. nat. allegatis. Holmiæ, 1750-1764.

• **COMSTOCK,** John Henry.

COTTON INSECTS. Report upon Cotton Insects prepared under the direction of the Commissioner of Agriculture in pursuance of an act of Congress approved June 19, 1878. Washington, D. C., 1879.

COQUILLET, D. W.

CORR.-BLATT. Correspondenzblatt, für Sammler von Insecten, insbesondere von Schmetterlingen. Regensburg, Manz.

CRAM. Cramer, Pieter.

PAP. EX. Papillons exotiques des trois parties du monde, l'Asie, l'Afrique et l'Amérique, rassemblés et décrits par Pierre Cramer. Dessinés sur les originaux, gravés et enluminés sous sa direction. Amsterdam, Balde. 1775-1782, Vols. I-IV.

CROFT, Henry H.

CURT. Curtis John.

APP. TO ROSS. NARR. 2ND VOY. Description of the insects brought home by Commander James Clark Ross; second voyage. Appendix Nat. Hist., 1831.

DALM. Dalman, Johann Wilhelm.

DIMMOCK, A. K., ANNA KATHERINE.

DODGE, G. M.

DRU. Drury, Drew.

ILLUSTR. Illustrations of natural history, wherein are exhibited upwards of two hundred and forty figures of exotic insects according to their different genera, etc. London, 1770-1782.

DUNCAN, James.

DUP. Duponchel, Philogène Auguste Joseph.

CAT. MÉTH. Catalogue Méthodique des Lépidoptères d'Europe distribués en familles, tribus et genres, avec l'exposé des caractères, etc. Paris, 1844-1846.

DYAR, Harrison G.

EDW. Edwards, William H.

ENT. AMER. Entomologica Americana; organ of and published by the Brooklyn Entomological Society, 1885-1890, at Brooklyn, N. Y.

ENT. MO. MAG. The Entomologists' Monthly Magazine, London: Van Voorst.

ENT. NEWS. Entomological News and Proceedings of the Entomological Section of the Academy of Natural Sciences. Published by the Amer. Ent. Soc., Philadelphia.

ENTOMOLOGIST. The Entomologist; an illustrated journal of general entomology, London.

ESP. Esper, Eugen Johann Christoph.

SCHMETT. Die (Europäischen) Schmetterlinge in Abbildungen nach der Natur mit Beschreibungen. Erlangen, 1771-1794. Noctuids in Pt. IV, 1786. Suppl., 1805-1807.

FABR. Fabricius, Johann Christian.

SYST. ENT. Systema Entomologiæ sistens Insectorum classes, ordines, genera, species, adjectis synonymiis, locis, descriptionibus, observationibus. Flensburgi et Lipsiæ, Korte, 1775.

GEN. INS. Genera eorumque characteres naturales secundum, numerum, figuram, situm et proportionem omnium partium oris adjecta mantissa specierum nuper detectarum. Chilonii, Bartsch, 1777.

SPEC. INS. Species Insectorum exhibentes eorum differentias specificas, synonyma auctorum, loca natalia, metamorphosin, adjectis observationibus, descriptionibus. Hamburgi et Kilonii, Bohn, 1781.

MANT. INS. Mantissa Insectorum sistens eorum species nuper detectas adjectis characteribus genericis, differentiis specificis, emendationibus, observationibus. Hafniæ, Proft, 1787.

ENT. SYST. Entomologia systematica emendata et aucta, secundum classes, ordines, genera, species, adjectis synonymiis, locis, observationibus, descriptionibus. Hafniæ, Proft, 8, T. III, pars 1 et 2, 1793 and 1794.

FAGER, D. B.

FELD. Felder, Cajetan.

REISE DER NOV., ZOOL. Reise der Oesterreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859. Zoologischer Theil, zweiter Band, 1864-1875.

FISCHER, Philip.

FITCH, Dr. Asa.

REPT. INS. N. Y. Reports on the noxious, beneficial, and other insects of the State of New York. 13 reports, beginning 1855.

FOURTH REPT. ENT. COMM. Fourth Report of the United States Entomological Commission. U. S. Department of Agriculture, Washington, 1885.

FRENCH, George H.

CAT. ILLS. Synopsis of the Catalogue of Illinois. From the curator's report in the 7th Ann. Rept. of the Principal to the Board of Trustees of the So. Ills. Normal Univ., Carbondale, Ill., 1882.

G. AND R., or GRT. AND ROB. Grote (A. R.) and Robinson (C. T.)

GENTRY, Thomas A.

GERM. Germar, Ernst Friedrich.

- GEYER CARL. See Hübner for Zuträge.
- GMEL. Gmelin, Johann, Friedrich.
ED. LINN. SYST. NAT. *Systema Naturæ*, &c., ed. xiii, aucta, reformatâ cura Joa. Frid. Gmelin, Lipsiæ, 1788-1793. -Insects in Vol. I, pts. 4 and 5, 1789.
- GN. Guéneé, Achille.
ESSAI, sur la classification de noctuélides. In *Ann. Soc. Ent. Fr.* 1837-1839.
NOCT. IND. METH. *Noctuarum Europæarum index methodicus*, etc. *Ann. Soc. Ent. Fr.* 1841, 235-250.
SP. GEN. LEP., NOCT. *Species Général des Lépidoptères. Noctuelites*, Vols. I-III. Paris, 1852, in the suites à Buffon forming Vols. v-vii of the *Lepidoptera*.
SP. GEN. LEP., DELT. As before. *Deltoides and Pyralites*. Paris, 1854. Forms Vol. VIII, of the *Lepidoptera*.
SP. GEN. LEP., PHAL. As before. *Uranidea, Phalénites* T. I. and II, Paris, 1857. Forms Vols. IX and X of the series.
- GOEZE, Johann August Ephraim.
BEITR. *Entomologische Beiträge zu des Ritter Linné zwölften Ausgabe des Natursystems*. Leipzig, 1777-1781.
- GOODELL, L. W.
- GOODHUE, Charles H.
- GOSSK, Philip Henry.
CAN. NAT. *The Canadian Naturalist*, a series of observations on the Natural History of Lower Canada. London. 1840.
- GRT. Grote, Augustus Radcliffe.
CHECK LIST NOCT. or LIST NOCT. *Check List of the Noctuidæ of America north of Mexico*. Buffalo, Reinecke & Zeech. Pt. I, 1875, pt. II, 1876.
NEW LIST. *New Check List of North American Moths*, 1882.
ILL. ESSAY. *An Illustrated Essay on the Noctuidæ of North America*, with "A Colony of Butterflies." London, 1882.
REVISED LIST, 1892.
- GUÉR. Guérin-Meneville, Félix Edouard.
ICON. RÈGNE ANIM. *Iconographie du règne animal de G. Cuvier*, etc. Paris, 1829-1838.
- GUNDLACH, Dr. Juan.
CONTR. ENT. CUB. *Contribucion Entomologia Cubana*. Havannah, 1886.
- HARR. Harris, Thaddeus William.
REPT. INS MASS. A report on the insects of Massachusetts injurious to vegetation. Cambridge, 1841-1842.
ENT. CORR. *Entomological correspondence of Thaddeus William Harris, M. D.* Edited by Samuel H. Scudder. Boston Soc. Nat. Hist. Occasional papers, 1869.
- HARR. INJ. INS., FLINT ED. A treatise on some of the insects injurious to vegetation. Edited by Charles L. Flint. New York, 1862.
- HARV. Harvey, Dr. Leon F.
- HAW. Haworth, Adrian Hardy.
LEP. BRIT. *Lepidoptera Britannica, sistens digestionem novam Insectorum Lepidopterorum que in Magna Britannia reperiuntur*, etc. London, 1803-1812.
- HBN. Hübner, Jacob.
SAMML. EX. SCHMETT., *Sammlung exotischer Schmetterlinge*. Augsburg, 1806-1824.
SAMML. EUR. SCHMETT., *Sammlung europäischer Schmetterlinge*. Augsburg, 1806-1824.
VERZEICHNISS. *Verzeichnis bekannter Schmetterlinge*. Augsburg, 1816. The noctuidæ in the volume were not issued until after 1818.
ZUTRÄGE. *Zuträge zur Sammlung exotischer Schmetterlinge, bestehend in Bekundigung einzelner Fliegmuster neuer oder rarer nicht europäischer Gattungen*. Augsburg, 1818-1823, 1825-1832 (von Carl Geyer) 1837 (von Carl Geyer).
- HYN. Hufnagel.
BERLIN. MAG. *Berliner Magazin*.
- HOCH. von Hochenwarth, Sigmund.
- H. SCH. Herrich-Schaeffer, Gottlieb August William.
EUR. SCHMETT. or SCHMETT. EUR. *Systematische Bearbeitung der Schmetterlinge von Europa*, als Text, Revision und Supplement zu J. Hübners *Sammlung europäischer Schmetterlinge*. Regensburg, Mans., 1843-1856. *Noctuidæ*, Vol. II, 1845.

H. SCH. Herrich-Schaeffer, Gottlieb August William—Continued.

EXOT. SCHMETT. or LEPID. EXOT. Lepidopterorum exoticorum species novæ aut minus cognitæ. Collection de nouvelles espèces de Papillons exotiques. Ratisbonne, 1850-1858.

NEUE SCHMETT. EUR. Neue Schmetterlinge aus Europa und den angrenzenden Ländern. Regensburg, 1856.

HULST, George D.

HUMPH. BRIT. MOTHS. British moths and their transformations. Arranged and illustrated in a series of plates by Henry W. Noel Humphreys. London, 1857.

HY. EDW. Edwards, Henry.

INSECT LIFE. Devoted to the economy and life habits of insects, especially in their relations to agriculture. Periodical bulletin of the Division of Entomology, United States Department of Agriculture. Washington, D. C.

JARDINE NAT. LIBR. The Naturalist's Library, by Sir William Jardine. Edinburgh. Lepidoptera, 1835-1841.

JOHNSTON, James.

KELICOTT, David.

KIRBY, William.

FR. BOR. AMER. Fauna boreali-Americana, or the zoölogy of the northern parts of British America, containing descriptions of the objects of natural history collected on the late northern land expeditions under command of Sir John Franklin. Part IV, The Insects, 1837.

KOEBELE, Albert.

LATR. Latreille, Pierre André.

GEN. CRUST. ET INS. Genera crustaceorum et insectorum secundum ordinem disposita, iconibus exemplisque plurimis explicata. Paris, 1806-1809.

CONSID. GÉN. DES CRUST. ET INS. Considérations générales sur l'ordre naturel des animaux composant les classes des Crustacés, des Arachnides et des Insectes, avec un tableau méthodique de leurs genres disposés en familles. Paris, 1810.

LED. Lederer, Julius.

NOCT. EUR. Die Nocturnen Europas, mit Zuziehung einiger bisher meist dazu gezählten Arten des asiatischen Russlands, Kleinasiens, Syriens u. Labradors. Wien, 1857.

LEFE. Lefebure, Alexandre.

LINN. or LINNÉ. Linné, Carl von.

FR. SUBC. Fauna Suecica sistens animalia Sueciæ regni. Quadrupedia, Aves, etc. Editio altera auctior. Stockholm, 1761.

SYST. NAT., ED. X. Systema Naturæ per regna tria naturæ secundum classes, ordines genera, species, cum characteribus, differentiis, synonymis, locis, ed. decima reformatâ, Holmiæ I, 1758; II, 1759.

SYST. NAT., ED. XII. Systema naturæ per regna tris naturæ secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis, ed. duodecima reformatâ. Holmiæ, I, 1766, II, 1767, III, 1768.

MUS. L. U. Museum S. R. M. Ludovicæ Ubricæ Reginae, etc., in quo animalia rariora, exotica, inprimis insecta et conchilia describuntur et determinantur, prodromi instar editum. Holmiæ, 1764.

LANT. or LINTN. Lintner, James Albert.

ENT. CONTR. Entomological contributions, I-IV, from the reports on the New York State Cabinet of Natural History. Albany, N. Y. I, Vol. xxiii, 1872; II, Vol. xxiv, 1872; III, Vol. xxvi, 1874; IV, Vol. xxx, 1878.

The paging cited is that of the separates; I and IV are paged separately, II and III as in the reports.

LUCAS, Hippolyte.

MEAD, Theodore L.

MEIGEN, Johann Wilhelm.

SYST. BESCHR. SCHMETT. EUR. Systematische Beschreibung der europäischen Schmetterlinge. Aachen, 1827-1832.

MÉN. Ménétriés, E.

SCHRENK'S REISEN. Schrenk Reisen u. Forschungen im Amurlande. Lepidoptera, Petersburg, 1859.

MEYER, Julius.

MINOT, Charles Sedgwick.

- MOESCHL.** Moeschler, Henrich Benno.
- MOFFAT, J.** Alston.
- MOORE, Frederick.**
- MORR.** Morrison, H. K.
- N. B. L.** Nomen bis lectum. Indicates that the name is preoccupied.
- NEUM.** Neunmoegen, Berthold.
- NO. AM. ENT.** The North American Entomologist. Buffalo, N. Y. Reinecke & Zesch, 1879-80. One volume only.
- OCHS.** Ochsenheimer, Ferdinand.
- SCHMETT.** EUR. Die Schmetterlinge von Europa. Leipzig, 1807-1816. The *systema glossatorum* is in Vol. iv, 1816.
- OLIV.** Olivier, Antoine Guillaume.
- ENC. METH.** Encyclopédie méthodique, dictionnaire des insectes. Paris, 1789-1791 et 1825. Vol. VIII. containing the Noctuids, 1811-1812.
- PACIFIC COAST LEP.** Pacific Coast Lepidoptera; a series of papers under this title published in the Proc. Cal. Ac. Sci., by Henry Edwards. A few of the later as separates only.
- PACK.** Packard, Alpheus Spring.
- GUIDE.** Guide to the Study of Insects. 6th edition. New York, Henry Holt & Co., 1878.
- PAPILIO,** organ of and published by the New York Entomological Club, 1881-1884.
- PEARSALL, Richard F.**
- PILATE, G. R.**
- PROC. AC. NAT. SCI. PHILA.** Proceedings of the Academy of Natural Science of Philadelphia. Published by the Academy.
- PROC. AM. PHIL. SOC.** Proceedings of the American Philosophical Society, Philadelphia. Published by the Society.
- PROC. BOST. SOC. N. H.** Proceedings of the Boston Society of Natural History. Published by the Society at Boston, Mass.
- PROC. CAL. AC. SCI.** Proceedings of the California Academy of Sciences, San Francisco. Published by the Academy.
- PROC. DAV. AC. SCI.** Proceedings of the Davenport Academy of Sciences. Published by the Academy, Davenport, Iowa.
- PROC. ENT. SOC. PHIL.** Proceedings of the Entomological Society of Philadelphia. Published by the Society, and succeeded by the Trans. Am. Ent. Soc.
- PROC. U. S. NAT. MUS.** Proceedings of the United States National Museum, Washington, D. C.
- PROC. ZOOL. SOC.** Proceedings of the Zoölogical Society of London. Published by the Society.
- PR. SYN.** A synonym of the preceding good species.
- PSYCHE.** Organ of and published by the Cambridge Entomological Club, Cambridge, Mass.
- PUT. CRAM.** Putman-Cramer, A. W.
- REPT. CHIEF ENG.** Annual report upon explorations and surveys in the department of the Missouri by E. H. Ruffner, First Lieut. Eng., U. S. A., being Appendix RR. of the annual report of the Chief of Engineers for 1877. Washington, D. C., 1878.
- REPT. PEAB. AC. SCI. APP.** Annual report of the Peabody Academy of Science—Appendix. Salem, Mass. Published by the Academy. The Appendix contains the descriptive papers.
- RILEY, Charles Valentine.**
- REPT. INS. MO.** Annual report on the noxious, beneficial, and other insects of the State of Missouri. 1869-1877. Nine reports. Jefferson City, Mo.
- INDEX AND SUPPL. TO MO. REPTS.** General index and supplement to the nine reports on the insects of Missouri. Bulletin No. 6, U. S. Entomological Commission, 1881.
- ROB.** Robinson, Coleman T.
- ROTT.** Von Rottenburg, S. A.
- NATURF.** Naturforscher. Noct., 1776, pp. 111-144.

S. & A. Smith (James Edward) and Abbott (John).

INS. GA. The Natural History of the rarer Lepidopterous insects of Georgia, collected from the observations of John Abbott, with the plants on which they feed. London, 1797.

SAGRA'S CUBA. Ramon de la Sagra. Historia fisica, politica y natural de la Isla de Cuba. Segunda parte: Historia natural: Tom. vii. Crustaceos, Aragnides é Insectos. Paris, 1856. Lepid., pp. 202-313 by Lucas.

SANB. Sanborn, F. G.

SAUND. Saunders, William.

FRUIT INS. Insects injurious to fruits. Philadelphia: Lippincott & Co., 1883.

SAY, Thomas.

AMERICAN ENT., LEC. ED. The complete writings of Thomas Say on the Entomology of North America. Edited by John L. LeConte, New York, 1859.

SCHRANK, Franz von Paula.

FN. BOICA. Fauna Boica. Nuremberg, 1798-1804, Vols. III, in pts. 6.

SMITH, John B.

LIST LEP. BOR. AM. List of the Lepidoptera of Boreal America: Philadelphia, American Entomological Society, 1891.

SNELLEN, P. C. T.

SOULE & ELIOT. Soule, Caroline G., and Eliot, Ida M.

SPEYER, Adolph

STAUD. Standinger, O.

CAT. LEP. EUR. Catalog der Lepidopteren des europäischen Faunengebiets, Dresden, 1871.

STEPH. Stephens, James Francis.

ILL. BRIT. ENT., HAUST. Illustrations of British Entomology, or a synopsis of indigenous insects, containing their generic and specific descriptions, with an account of their metamorphoses, time of appearance, localities, food and economy, as far as practicable, with colored figures (from Westwood) of the rarer and more interesting species. Haustellata II, iii, 1829.

STETT. ENT. ZEIT. Entomologische Zeitung, herausgegeben von dem Entomologischen Verein zu Stettin.

STGR. See STAUD.

STRETCH, Richard H.

ZYG AND BOMB. Illustrations of the Zygenidae and Bombycidae of North America. San Francisco, author, 1872-1873.

STREK. or STRCK. Strecker, Hermann

LEP. RHOP. ET HET. Lepidoptera, Rhopaloceres and Heteroceres, Indigenous and exotic, with descriptions and colored illustrations. Reading, Pa., author, 1872-1878.

SUB NOM. Under the name of.

S. V. Schiffermüller, Ignaz.

Systematisches Verzeichniss der Schmetterlinge der Wiener Gegend, Wien, 1776.

TAUSCH. Tauscher, A. M.

TEPPER, Fred.

THAXTER, Roland.

THUNB. Thunberg, Carl Peter.

MUS. NAT. AC. UPS. DISS. Museum naturalium Academiae Upsaliensis. Dissert., 1787-1788.

DISS. ENT. Dissertatio Entomologica novae insectorum species sistens. Upsalia, 1781-1791.

INS. SUED. Dissertatio Entomologica sistens Insecta Suecica. Upsalia, 1784-1795.

TJDSCHR. VOOR ENTOM. Tijdschrift voor Entomologie uitgegeven door de Nederlandsche Entomologische Vereeniging. 's Gravenhage.

TR. Treitschke, Friedrich.

SCHMETT. EUR. Die Schmetterlinge von Europa, vol. v, 1825. Leipzig. A continuation of Ochaenheimer's work; vol. v includes the Noctuidae and is the only volume cited here.

TRANS. AM. ENT. SOC. Transactions of the American Entomological Society. Published by the society. Philadelphia. Succeeds the Proc. Ent. Soc., Philadelphia.

TRANS. ENT. SOC. LOND. Transactions of the Entomological Society of London. Published by the society.

TRANS. KANS. AC. SCI. Transactions of the Kansas Academy of Science. Topeka. Published by the Academy.

- TRANS. NOV. SC. INST. NAT. SCI. Transactions of the Nova Scotia Institute of Natural Sciences. Published by the Institute.
- VERH. K. K. ZOOL.-BOT. GES. Verhandlungen der koenig.-kaiserlichen zoologisch-botanischen Gesellschaft in Wien. Published by the society. Vienna.
- VETENSK. ACAD. HANDL. Kongl. Vetenskaps Academiens Handlingar, Stockholm. Published by the Academy.
- WALLENG. See WALLGR.
- WALLGR. Wallengren, H. D. J.
- WEEKS, Archibald C.
- WESTW. Westwood, John Obadiah.
- WESTW. ED. DRU. Drury, illustrations, etc., q. v. Edited by J. O. Westwood, London, 1837-1842.
- WHEELER'S REPT. SURV. WEST 100 MERID. Report upon geographical and geological explorations and surveys west of the 100th meridian, in charge of First Lieut. George M. Wheeler, Corps of Engineers, U. S. Army, under the direction of Brig. Gen. A. A. Humphreys, Chief of Engineers, U. S. Army. Washington, D. C., 1875.
- WIEN. ENT. MONATSCR. Wiener Entomologische Monatschrift. Vienna. Not a society publication.
- WLK. Walker, Francis.
- WOOD, William.
- INDEX ENT. Index Entomologicus, or a complete illustrated catalogue of the Lepidopterous insects of Great Britain, consisting of 1,946 figures. London, 1833-1839.
- WORTH. Worthington, C. E.
- W. V. Wiener Verzeichniss. See S. V.
- ZELL. Zeller, Philipp Christoph.
- ZETT. Zetterstedt, Johann Wilhelm.
- INS. LAP. Insecta Lapponica descripta. Lipsie, 1840. The Lepidoptera appeared in 1839.

CATALOGUE.

Family THYATIRIDÆ.

Genus **THYATIRA** Ochs.
1816. Ochs., Schmett. Eur., iv, 77.

T. scripta Gosse.*

1840. Gosse, Canadian Naturalist, 249, *Thyatira*.
1866. Wlk., C. B. Mus., Het., ix, 6, *Gonophora*.
1863. Grt., Proc. Ent. Soc. Phil., ii, 58, *Gonophora*.
1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 77, *Habrosyne*.
1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 129, *Habrosyne*.
1875. Speyer, Stett. Ent. Zeit., xxxvi, 108, *Thyatira*.
1881. Grt., Can. Ent., xiii, 152, *Habrosyne*.
1883. Thaxter, Papilio, iii, 10, larva on raspberry.
abrassa Gn.
1852. Gn., Spec. Gen. Noct., i, 12, pl. 3, f. 2, *Thyatira*.
1866. Wlk., C. B. Mus., Het., ix, 6, pr. syn.
1863. Grt., Proc. Ent. Soc. Phil., ii, 58, pr. syn.
derasa † Edw.
1873. Edw., Proc. Cal. Ac. Sci., v, 189, *Thyatira*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 5, pr. syn.

HABITAT.—United States generally, northward to Alaska. Northern States in June; British Columbia, July and August.

I refer this species to *Thyatira* because I have not been able to find any essential differences between it and *batis*. The type of maculation is quite distinct, but does not suffice for generic separation. In the Edwards collection there is an Alaskan specimen, and in the British Museum one from Hudson Bay Territory, which indicate a new species. They are much darker in color, and in the course of the t. a. line agree with *derasa* rather than with *scripta*.

Genus **EUTHYATIRA** Smith.
1891. Smith, List Lepidoptera 34.

E. lorata Grt.

1881. Grt., Papilio, i, 75, *Thyatira*.
1882. Grt., Ill. Essay, 48, pl. i, f. 2, *Thyatira*.
1891. Smith, List Lepidoptera, 34, *Euthyatira*

HABITAT.—Washington.

The type is in Mr. Neumøgen's collection. In proposing the genus *Euthyatira* for the two species here associated, I wish to express my conviction that the American species heretofore referred to *Thyatira* are not at all congeneric with *batis*, the type of the genus. There is a certain similarity in the type of maculation, but none in wing form or in other details.

E. pudens Gn.*

- 1852. Gn., Spec. Gen., Noct. I, 13, pl. III, f. 1, *Thyatira*.
- 1856. Wlk., C. B. Mus., Het., IX, 8, *Thyatira*.
- 1874. Strk., Lep. Rhop. et Het., 79, *Thyatira*.
- 1889. Dyar, Can. Ent. XXI, 209, larva.
- 1891. Smith, List Lepidoptera, 34, *Euthyatira*.
anticostiensis Grt.

HABITAT.—Pennsylvania, northward to Labrador; Anticosti; Newfoundland; Canada in May; New York in July.

The type of *pudens* is in the British Museum. I can not find that *anticostiensis* has been characterized except by name in Mr. Grote's list of 1890.

Genus **PSEUDOTHYATIRA** Grt.
1864. Grt., Proc. Ent. Soc. Phil., III, 539.

P. cymatophoroides Gn.*

- 1852. Gn., Spec. Gen. Noct., I, 13, *Thyatira*.
- 1856. Wlk., C. B., Mus., Het., IX, 8, † *Thyatira*.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 58, *Lacinia*.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 134, *Lacinia*.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 337, *Lacinia*.
- 1864. Grt., Proc. Ent. Soc. Phil., III, 539, *Pseudothyatira*.
- 1875. Morr., Psyche, I, 41, *Pseudothyatira*.
- 1881. Grt., Can. Ent. XIII, 152, *Pseudothyatira*.
- 1883. Thaxter, Papilio, III, 10, larva on red oak.
var. *expultrix*, Grt.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 58, pl. II, f. 6, *Lacinia*.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 134, larva.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 337, an sp. dist. pr.
- 1864. Grt., Proc. Ent. Soc. Phil., III, 539, an sp. dist. pr.
- 1882. Grt., New List, 22, an var. pr.
cymatophoroides ♀ Gn.
- 1852. Gn., Spec. Gen., Noct., I, 14, *Thyatira*.
- 1856. Wlk., C. B., Mus., Het., IX, 8, var. β.
- 1863. Grt., Proc. Ent. Soc. Phil., II, 58, = *expultrix*.
- 1873. Hy. Edw., Proc. Cal. Ac. Sci., v, 189, *Thyatira*.

HABITAT.—West Virginia; Pennsylvania, northward to Nova Scotia; British Columbia; Colorado; New Mexico; Canada, June and July; New York, May, July, August.

The types are in the British Museum, both of the species and the variety. In the museum of the Boston Society of Natural History a specimen in the Harris collection is marked *Noctua cingulata*.

Genus **BOMBYCIA** Hbn.

1816. Hübner, Tentamen.

I follow Mr. Grote in the use of this Hübnerian term, because *Cymatophora* has been used in the Geometridæ, and the term has become confusing. It is quite certain that our species are not congeneric; but all are very rare, and I have never had any material for study.

B. improvisa Hy. Edw.1873. Hy. Edw., Proc. Cal. Ac. Sci., v, 189, *Cymatophora*.1874. Grt., Can. Ent., vi, 154, *Bombycia*.1875. Grt., Bull. Buff. Soc. Nat. Sci., iii, 78, *Bombycia*.1876. Grt., Stett. Ent. Zeitz., xxxvii, 134, *Bombycia*.1881. Grt., Papilio, i, 76, *Bombycia*.**HABITAT.**—Washington.

The type is in the Edwards collection.

B. semicircularis Grt.1881. Grt., Papilio, i, 75, *Bombycia*.1882. Grt., Ill. Essav, 48, pl. i, f. 1, *Bombycia*.**HABITAT.**—Washington.

The type is in the Neumoegen collection.

B. tearlii Hy. Edw.*1886. Hy. Edw., Ent. Amer., ii, 11, *Gluphisia*.1888. Hy. Edw., Ent. Amer., iv, 63, *Bombycia*.1891. Smith, List Lepidoptera, 34, *Bombycia*.**HABITAT.**—California, September and October.

The type is in the Edwards collection.

B. magnifica Strk.1876. Strk., Proc. Ac. Nat. Sci. Phil., xxviii, 151, *Cymatophora*.1891. Smith, List Lepidoptera, 34, *Bombycia*.**HABITAT.**—Florida.

Mr. Strecker probably has his own type.

B. candida Smith.1890. Smith, Ent. Amer., vi, 179, *Bombycia*.**HABITAT.**—Florida.

The type is in Mrs. Slosson's collection.

B. caniplaga Wlk.1856. Wlk., C. B. Mus., Het., ix, 18, *Cymatophora*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 5, *Bombycia*.**HABITAT.**—Canada.

The type is in the Saunders collection at Oxford, England. A figure sent me by Mr. Schaus proves it to be = *Edema transversata* Wlk. = *Ellida gelida* Grt.

Genus **LEPTINA**, Gn.
1852. Gn., Spec. Gen. Noct., 1, 14.

The types of all the species in this genus, with the exception of *latebricola*, Grt., are in the British Museum. *Latebricola* type, is in the collection of the American Entomological Society, and is, as Mr. Grote suggests, the same as *dormitans*. On the other hand, *australis* is not, as I had supposed from specimens named by Mr. Grote, the same as *ophthalmica*, but probably a good species. Mr. Grote has mixed varietal forms of Guenée's species with his own. As the matter stands now, after studying all the types, the species divide as follows:

Shoulders and base of primaries concolorous.....	DORMITANS.
Shoulders and base of primaries white.	
Median lines complete, even, white	DOUBLEDAYI.
T. p. line incomplete, reniform distinct.....	OPHTHALMICA.
T. p. line wanting, reniform wanting.....	AUSTRALIS.

L. dormitans Gn.*

1852. Gn., Spec. Gen., Noct., 1, 15, *Leptina*.
1856. Wlk., C. B. Mus., Het., ix, 10, *Leptina*.
1863. Grt., Proc. Ent. Soc. Phil., II, 57, *Leptina*.
latebricola Grt.
1863. Grt., Proc. Ent. Soc. Phil., II, 57, *Leptina*.
1881. Grt., Can. Ent., XIII, 152, *Leptina*.
1890. Grt., Revised Check List, 1, † pr. syn.

HABITAT.—Canada; Maine; Rhode Island; New York; New Jersey; Wisconsin.

L. doubledayi Gn.*

1852. Gn., Spec. Gen., Noct., 1, 15, *Leptina*.
1856. Wlk., C. B. Mus., Het., ix, 10, *Leptina*.
1863. Grt., Proc. Ent. Soc. Phil., II, 58, *Leptina*.

HABITAT.—Maine; Massachusetts in June; New York; Pennsylvania.

L. ophthalmica Gn.*

1852. Gn., Spec. Gen., Noct., 1, 15, pl. 3, f. 6, *Leptina*.
1856. Wlk., C. B. Mus., Het., ix, 10, *Leptina*.
1863. Grt., Proc. Ent. Soc. Phil., II, 57, *Leptina*.

HABITAT.—New York in June; Massachusetts in June; Wisconsin.

L. australis Grt.*

1881. Grt., Can. Ent., XIII, 152, an var., *ophthalmica*.
1882. Grt., New List, 22, an spec. dist.
1891. Smith, List Lepidoptera, 34=*ophthalmica*.

HABITAT.—Texas, Alabama.

Family NOCTUIDÆ.

Genus **PANTHEA** Hbn.

1816. Hübner, Verzeichniss, 203.

I use this term to replace *Audela*, *Platyserura*, and in part *Charadra* as used by Mr. Grote. The species are structurally identical with the European *cænobita*, and one species—*acronyctoides*—has also practically the same type of markings.

P. acronyctoides Wlk.*1861. Wlk., Can. Nat. and Geol., vi., 37, *Audela*.1877. Grt., Can. Ent., ix, 27, *Audela*.1878. Grt., Bull. Geol. Surv., iv, 169, *Audela*.1891. Smith, List Lepidoptera, 34, *Panthea*.*cucomelana* Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 428, *Panthea*.

1878. Grt., Bull. Geol. Surv., iv, 169, pr. syn.

HABITAT.—Canada; River Rouge in June; Maine; Massachusetts; New York; Wisconsin.

Mr. Morrison's type is in the Tepper collection; Mr. Walker's is in the collection of the Entomological Society of Ontario, *vide* Grote. The references were made by Mr. Grote after seeing both types.

P. furcilla Pack.*1864. Pack., Proc. Ent. Soc. Phil., iii, 374, *Platyserura*.1873. Stretch, Zyg. & Bomb., 230, pl. 9, f. 15, *Platyserura*.

1874. Lint., Ent., Cont., iii, 131 f. 7, larva.

1881. Grt., Bull. Geol. Surv., vi, 258, 277, *Platyserura*.

1883. Thaxter, Papilio, iii, 11, larva.

1891. Smith, List Lepidoptera, 34, *Panthea*.

HABITAT.—Canada; Eastern and Middle States; Minnesota; New York in June.

The type of this species is in the Museum of Comparative Zoölogy at Cambridge.

P. gigantea French.1890. French, Can. Ent., xxii, 134, *Platyserura*.1891. Smith, List Lepidoptera, 34, *Panthea*.

HABITAT.—Colorado, Texas.

Prof. French has his own type. I had seen specimens in the Edwards collection, but had considered them local forms of *furcilla*.

P. palata Grt.*1880. Grt., Can. Ent., xii, 258, *Charadra*.1881. Grt., Papilio, i, 153, *Charadra*.1891. Smith, List Lepidoptera, 34, *Panthea*.

HABITAT.—Colorado; Arizona.

The type is in the British Museum. Mr. Butler has it under *Platyserura*.

Genus **DEMAS** Steph.

1829. Steph., Ill. Br. Ent., Haust., II, 59.

D. propinquilinea Grt. *1873. Grt., Trans. Am. Ent. Soc., IV, 293, *Charadra*.

1881. Goodell, Papilio, I, 15, larva.

1885. Dimmock, A. K., Psyche, IV, 274, larva.
flavicornis Smith.1884. Smith, Bull. Bkln. Ent. Soc., VII, 3, *Demas*.

HABITAT.—Maine in July; Massachusetts in June; Rhode Island and New York in May and July; New Jersey in May.

Mr. Grote's type is in the British Museum, and is, as I have for some time suspected, my *flavicornis*, the type of which is with Mr. Graef. I had seen *propinquilinea*, I believe, in Mr. Thaxter's collection, but the specimens were very much more sharply marked than the one which became my type. My generic reference holds good.

Genus **RAPHIA** Hbn.

1816. Hbn., Verzeichniss, 212.

R. abrupta Grt. *1863. Grt., Proc. Ent. Soc. Phil., II, 336, pl. 8, f. 3, *Raphia*.

HABITAT.—Canada, in June, to Texas; Colorado.

The type is in the British Museum.

R. frater Grt. *1863. Grt., Proc. Ent. Soc. Phil., II, 435, pl. 9, f. 7, *Raphia*.1883. Thaxter, Papilio, III, 13, larva on poplar.
personata Wlk.1865. Wlk., C. B. Mus., Het., XXXII, 606, *Saligena*.1868. G. and R., Trans. Am. Ent. Soc., II, 86, pr. syn.
var *coloradensis* Put. Cram. *1886. Cramer, Ent. Amer., II, 142, *Raphia*.
pallula Hy. Edw.1886. Hy. Edw., Ent. Amer., II, 168, *Raphia*.

1891. Smith, List Lepidoptera, 34, pr. syn.

HABITAT.—Canada to Texas; Colorado; Northern States, and Canada in June and July.

The Grote and Walker types are in the British Museum. Mr. Cramer's type is in the Doll collection, and the type of *pallula* is in the Edwards collection. I have seen all the types and the above synonymy is correct, I believe. The *Raphia onychina* Gn., was described as *Epunda*, referred to *Raphia* by Walker and to *Oleocercis* by Grote. This has resulted in a duplication of the name in my list of Lepidoptera.

Genus **CHARADRA** Wlk.

1865. Wlk., C. B. Mus., Het., XXXII, 445.

C. deridens Gn. *1852. Gn., Spec. Gen., Noct., I, 35, pl. 3, f. 8, *Diphtera*.1856. Wlk., C. B. Mus., Het., IX, 36, *Diphtera*.

1868. G. and R., Trans. Am. Ent. Soc., II, 86, *Charadra*.

1870. Saund., Can. Ent., II, 145, larva.

1874. Lint., Ent. Cont., III, 157, f. 12, larva.

1883. Thaxter, Papilio, III, 11, life hist.

1885. Dimmock, A. K., Psyche, IV, 274, on *Betula*.
circulifera Wlk.

1857. Wlk., C. B. Mus., Het., XI, 709, *Acronycta*.

1868. G. and R., Trans. Am. Ent. Soc., II, 76, pr. syn.

1882. Grt., Ill. Essay, 39, pr. syn.
contigua Wlk.

1865. Wlk., C. B. Mus., Het., XXXII, 446, *Charadra*.

1868. G. and R., Trans. Am. Ent. Soc., II, 86, pr. syn.

HABITAT.—Canada to Georgia, Florida and Texas; Colorado; New York in May; Maine and Massachusetts in July; Canada in February.

All the types are in the British Museum, and have been already correctly referred by Messrs. Grote and Robinson.

C. dispulsa Morr.*

1874. Morr., Proc. Bost. Soc., N. H., XVII, 213, *Charadra*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 4, *Charadra*.

HABITAT.—Texas in March, May, June, August, October.

I do not know where the type is to be found; the species is well known.

C. decora Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 55, *Charadra*.

HABITAT.—California.

I do not know this species, which must be a striking one from the description. Mr. Grote has for some reason omitted it from all his lists.

Genus **FERALIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 58.

F. jocosa Gn.*

1852. Gn., Spec. Gen., Noct., I, 37, *Diphtera*.

1856. Wlk., C. B. Mus., Het., IX, 56, *Diphtera*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 58, *Feralia*.

1875. Grt., Stett. Ent. Zeit., XXXVI, 195, *Feralia*.

1883. Grt., Can. Ent., XV, 28, *Feralia*.

fallax † G. and R.

1868. G. and R., Trans. Am. Ent. Soc., II, 77, *Moma*.

HABITAT.—New Hampshire; New York; New Jersey in March.

The type is in the British Museum.

F. februalis Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 60, *Feralia*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 310, *Arthrochlora*.

1875. Grt., Stett. Ent. Zeit., XXXVI, 197, *Arthrochlora*.

HABITAT.—California.

Types are in the British Museum and in the Edwards collection.

F. major Smith.*

1890. Smith, Ent. Amer., vi, 26, *Feralia*.

HABITAT.—New Hampshire; Plattsburg, New York, April and May; District of Columbia.

Types are in the National Museum.

Genus **MOMOPHANA** Grt.

1875. Grt., Stett. Ent. Zeit., xxxvi, 195.

M. comstocki Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 59, *Feralia*.

1875. Grt., Stett. Ent. Zeit., xxxvi, 195, *Momophana*.

HABITAT.—New York in May; Canada.

The type is with Prof. Comstock at Ithaca, N. Y.

Genus **MOMA** Hbn.

1816. Hbn., Verzeichniss, 203.

M. fallax H. Sch.*

1853. H. Sch., Exot. Schmett., 80, f. 211, *Moma*.

1856. Wlk., C. B. Mus., Het., ix, 35, *Diphthera*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 213, *Diphthera*.

1881. Grt., Bull. Geol. Surv., vi, 277, *Diphthera*.

1882. Smith, Bull. Bkln. Ent. Soc., v, 43, *Moma*.

HABITAT.—Canada in July; New York, in July and August, to District of Columbia; Tennessee; Illinois; Texas in March, April, July.

I do not know where the type of this species can be found.

Genus **ARSILONCHE** Led.

1857. Lederer, Noct. Eur., 70.

A. albovenosa Goeze.*

1781. Goeze, Ent. Beitr., iii, 3, p. 251, *Noctua*.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 428, *Arsilonche*.

1876. Harv., Can. Ent., viii, 35, *Arsilonche*.

1880. Coquillett, Can. Ent., xii, 44, larva on *Polygonum*.

1883. Grt., Can. Ent., xv, 30, *Arsilonche*.

1887. Hy. Edw., Ent. Amer., iii, 168, larva on *Polygonum*.
ab. *fumosum* Morr.

1873. Morr., Bull. Buff. Soc. Nat. Sci., i, 275, *Arsilonche*.

1875. Morr., Proc. Ac. Nat. Sci., Phil., 1875, 428, *Arsilonche*.
var. *henrici* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 10, *Leucania*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 152, Pl. i, f. 15, *Ablepharon*.

1875. Thaxter, Psyche, i, 188, larva on grass.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 428, pr. syn.

1883. Grt., Can. Ent., xv, 30, *Arsilonche*, sp. dist. pr.

var. *evanidum* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 10, *Leucania*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 112, Pl. i, f. 16, *Ablepharon*.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 428, pr. syn.

HABITAT.—Canada in May and June; Northern, Eastern, Middle, and Central States; Massachusetts in April; Kansas and California in January.

Mr. Morrison's type is in the Tepper collection. Mr. Grote's types I have not seen. They may be in the British Museum; but if so I overlooked them. The species has not been critically studied, and the true relation of the forms is yet in doubt. The American form may yet prove distinct, though a very close ally to the European insect. I am not nearly so ready to believe in the identity of European and American species as I once was.

Genus **MEROLONCHE** Grt.

1882, Grt., Ill. Essay, 50.

In this genus and in the following, from which the present has been separated, I have few original notes. Dr. Riley has been accumulating material for several years past for a critical and revisional monograph of the species, and what little I have done is in his hands. Dr. Riley has made comparisons in the European museums, and I did not, therefore, look over the species except as they came accidentally under my notice. So, too, I have given the location of the types only where they are in American collections of which I had notes, or where I accidentally noted the fact. The bibliography, however, is as nearly complete as in most other genera.

M. spinea Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 78, *Apatela*.

1878. Hy. Edw., Pac. Coast Lep., No. 27, 3, *Acronycta*; larva.

1882. Grt., Ill. Essay, 50, *Merolonche*.

1883. Grt., Papilio, III, 112, *Merolonche*.

HABITAT.—California; Colorado.

The type is in the Edwards collection.

M. lupini Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 79, *Apatela*.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 78, *Apatela*.

1882. Grt., Ill. Essay, 50, *Merolonche*.

1883. Grt., Papilio, III, 112, *Merolonche*.

HABITAT.—California.

The type is in the Edwards collection.

Genus **ACRONYCTA** Ochs.

1816. Ochs., Schmett., IV, 62.

A. occidentalis G. & R.*

1866. G. & R., Proc. Ent. Soc. Phil., VI, 16, *Acronycta*.

1872. Saund., Can. Ent., IV, 49, larva.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 108, *Acronycta*.

1876. Grt., Ann. Lyc. Nat. Hist., N. Y., XI, 302, *Apatela*.

1882. Packard, Papilio, II, 181, larva.

1883. Grt., Papilio, III, 67, *Apatela*.

1883. Hy. Edw., Papilio, III, 132, larva.
 1885. Dimmock, A. K., Psyche, IV, 274, larva.
pei † Gn.
 1852. Gn., Spec. Gen., Noct., I, 43, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 42, *Acronycta*.
 1866. G. & R., Proc. Ent. Soc. Phil., VI, 16, pr. syn.

HABITAT.—Canada to Virginia; Central States; Illinois in August. In the Harris collection are specimens of this species marked *sagittaria* Harr., and dated, respectively, April 25, May 25, and June 1. It has been taken in Canada from May to August, and in New York to September.

A. morula G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., II, 196, Pl. III, f. 75, *Acronycta*.
 1878. Lintner, Ent. Cont., IV, 137, larva.
 1883. Thaxter, Papilio, III, 13, larva.
 1883. Grt., Papilio, III, 67, *Apatela*.
spinigera † Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 55, *Acronycta*.
 1882. Grt., Ill. Essay, 39, pr. syn.
ulmi Harr.
 1869. Harris, Ent. Corr., by Scudder, 312, Pl. III, f. 10, larva.
 1891. Smith, List Lepidoptera, 35, pr. syn.

HABITAT.—Canada to Virginia, west to the Mississippi Valley; Wisconsin; Minnesota; Canada in June and July; New York in July.

In the Harris collection the specimen marked *ulmi* is *morula* G. & R. It is labeled "Imago, June 11, 1850."

A. lobelise Gn.*

1852. Gn., Spec. Gen., Noct., I, 44, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 54, *Acronycta*.
 1881. Coquillett, Papilio, I, 6, larva.
 1883. Grt., Papilio, III, 68, *Apatela*.
 1886. French, Can. Ent., XVIII, 118, larva.

HABITAT.—Canada to Middle, Southern, and Central States; Canada and New York in June and July; Minnesota in August; Texas in March and April; New Jersey in June and August.

A. hasta Gn.*

1852. Gn., Spec. Gen., Noct., I, 45, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 54, *Acronycta*.
 1883. Grt., Papilio, III, 67, *Apatela*.

HABITAT.—Middle and Eastern States; Canada in June; Delaware in March and May.

A. telum Gn.

1852. Gn., Spec. Gen., Noct., I, 45, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 54, *Acronycta*.
 1883. Grt., Bull. Geol. Surv., VI, 571, *Apatela*.

HABITAT.—"Am. Sept."

This species has not been identified in American collections so far as known.

A. furcifera Gn.*1852. Gn., Spec. Gen., Noct., 1, 44, *Acronycta*.1856. Wlk., C. B. Mus., Het., ix, 54, *Acronycta*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—New York to Florida, to Illinois.

A. thoracica Grt.1880. Grt., No. Amer. Ent., 1, 94, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Colorado; New Mexico.

A. dentata Grt.*1875. Grt., Can. Ent., VII, 222, *Apatela*.

HABITAT.—Canada; Eastern and Northern States; Adirondack Mountains in July.

A. grisea Wlk.*1856. Wlk., C. B. Mus., Het., ix, 56, *Acronycta*.1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 78, *Acronycta*.1875. Grt., Can. Ent., VII, 222, *Apatela*.1882. Grt., Ill. Essay, 39, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.

1883. Hy. Edw., Papilio, III, 131, larva.

pudorata Morr.1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 93, *Acronycta*.

1875. Grt., Can. Ent., VII, 221, 222, pr. syn.

1880. Grt., Can. Ent., XII, 188, pr. syn.

HABITAT.—Canada to Southern and Central States; Minnesota in July.

The type of *pudorata* is in the Tepper collection.**A. tritona** Hbn.*1818. Hbn., Zutræge, 21, f. 107, 108, *Triana*.1816. Hbn., Verzeichniss, 201, *Triana*.1852. Gn., Spec. Gen., Noct., 1, 42, *Acronycta*.1856. Wlk., C. B. Mus., Het., ix, 53, *Acronycta*.1875. Grt., Can. Ent., VII, 221, *Apatela*.1880. Grt., Can. Ent., XII, 87, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Canada to Florida; Minnesota; Mississippi; Colorado; Portland, Oregon, in May.

A. betulæ Riley.*1884. Riley, Bull. Bkln. Ent. Soc., VII, 2, fig., *Acronycta*

HABITAT.—New Jersey; District of Columbia.

The types are in the National Museum.

A. innotata Gn.*1852. Gn., Spec. Gen., Noct., 1, 50, *Acronycta*.1856. Wlk., C. B. Mus., Het., ix, 59, *Acronycta*.1883. Grt., Papilio, III, 114, *Apatela*.*græfi* Grt.1863. Grt., Proc. Ent. Soc. Phil., II, 68, pl. iii, f. 6, *Diphthera*.

1875. Morr., Can. Ent., VII, 79, pr. syn.

HABITAT.—Canada; Northern and Eastern States; New York in August; Canada in July; Massachusetts in June.

A. falcula Grt.1877. Grt., Can. Ent., ix, 86, *Apatela*.

1881. Coquillett, Papilio, I, 6, larva.

1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Illinois.

A. parallela Grt.1877. Grt., Can. Ent., ix, 53, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Colorado; Texas.

A. albarufa Grt.*1874. Grt., Proc. Bost. Soc. N. H., xvi, 239, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.*walkerii* Andrews.1877. Andrews, Can. Ent., ix, 98, *Acronycta*.

1879. Graef, Bull. Bkln. Ent. Soc., I, 93, pr. syn.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States; Mississippi; New Mexico; Minnesota in June; Massachusetts in July.

A. paupercula Grt.*1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 197, *Apatela*.1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 4, *Apatela*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Texas in March.

A. vinnula Grt.*1861. Grt., Proc. Ent. Soc. Phil., II, 436, pl. ix, f. 2, *Microcalia*.1868. Grt., Trans. Am. Ent. Soc., II, 118, *Acronycta*.1883. Grt., Papilio, III, 68, *Apatela*.

HABITAT.—Canada to Texas: New York in May and August; New Jersey in June.

A. quadrata Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 154, *Apatela*.1883. Grt., Papilio, III, 114, *Apatela*.

HABITAT.—Kansas.

A. harveyana Grt.*1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 418, *Apatela*.*spinigera* † Wlk.1856. Wlk., C. B. Mus., Het., ix, 55, *Acronycta*.

1882. Grt., Ill. Essay, 39, pr. syn.

HABITAT.—New York in June; New Hampshire; Northern and Eastern States.

A. radcliffei Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., ii, 270, *Apatela*.

1878. Thaxter, Psyche, ii, 121, larva.

1883. Grt., Papilio, iii, 114, *Apatela*.

HABITAT.—Massachusetts in June; New Hampshire; New York; Adirondack mountains in August.

A. spinigera Gn.*1852. Gn., Spec. Gen., Noct., i, 45, *Acronycta*.1856. Wlk., C. B. Mus., Het., ix, 55, *Acronycta*.1878. Thaxter, Psyche, ii, 121, *Apatela*.1883. Grt., Bull. Geol. Surv., vi, 572, *Apatela*.

1885. Dimmock, A. K., Psyche, iv, 274, larva.

HABITAT.—“New York.”

Mr. Grote never positively identified this species. Walker's *spinigera* is cited to *harveyana*, while Mr. Grote says most of the specimens of *spinigera* in American collections are *pallidicoma*. Whether the larvæ mentioned by Thaxter and Dimmock are of this species, or of *pallidicoma*, or of some other yet unnamed species, is thus left uncertain. May, June, and August are dates given for *spinigera*.

A. tota Grt.1879. Grt., North Am. Ent., i, 12, *Apatela*.1883. Grt., Papilio, iii, 69, *Apatela*.

HABITAT.—Texas.

A. felina Grt.1880. Grt., Bull. Geol. Surv., v, 208, *Apatela*.

1887. French, Can. Ent., xix, 48, life history.

1889. French, Can. Ent., xxi, 36, *Apatela*.

HABITAT.—California; Colorado, Glenwood Springs in October. The types are in the Tepper and Edwards collections.

A. lepusculina Gn.*1852. Gn., Spec. Gen., Noct., i, 46, *Acronycta*.1856. Wlk., C. B. Mus., Het., ix, 55, *Acronycta*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 130, *Apatela*.1874. Grt., Can. Ent., vi, 154, *Apatela*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vii, 23, larva.

1888. Hy. Edw., Ento. Amer., iii, 185, *Apatela*.

HABITAT.—New York (†) to California; Colorado; Hudson's Bay Territory; Riley Co., Kansas, in June.

Guenée gives no definite locality. Mr. Edwards considers the species confined to the Pacific coast.

A. populi Riley.*

1870. Riley, 2d Rept. Ins. Mo., 119, f. 87, 88, *Acronycta*.

1872. Grt., Trans. Am. Ent. Soc., IV, 28, = *lepusculina*.

1881. Riley, Index and Suppl. to Mo. Repts., 74, † *lepusculina*.

1881. Grt., Papilio, I, 127 = *lepusculina*.

1888. Hy. Edw., Ent. Amer., III, 185, an sp. dist.

var. *sancta* Hy. Edw.

1888. Hy. Edw., Ento. Amer., III, 185, pr. var.

HABITAT.—Missouri; New Hampshire; New Brunswick in August; New York in July; Colorado.

Dr. Riley's types are in the National Museum. The type of *sancta* is in the Edwards collection. Probably most of the references to *lepusculina* in local lists should be to this species.

A. vulpina Grt.

1883. Grt., Can. Ent., xv, 8, *Apatela*.

1883. Grt., Papilio, III, 68, *Apatela*.

1883. Thaxter, Papilio, III, 15, larva.

1885. Dimmock, A. K., Psyche, IV, 274, larva.

1888. Grt., Can. Ent., XIX, 20, *Apatela*.

HABITAT.—Maine; Massachusetts; New York.

A. americana Harr.*

1841. Harris, Rept. Ins. Mass., 317, *Acronycta*.

1862. Harris, Ins. Inj. Veg., Flint ed., 436, f. 216-218, *Acronycta*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 154, *Apatela*.

1881. Coquillett, Papilio, I, 6, larva.

1883. Grt., Papilio, III, 111, *Apatela*.

1885. Dimmock, A. K., Psyche, IV, 274, food plants.

aceris † S & A.

1797. Sm. & Abb., Ins. Ga., II, 185, pl. 93, larva.

var. *obscura* Hy. Edw.

1886. Hy. Edw., Ent. Amer., II, 169, *Apatela*, pr. var.

HABITAT.—Canada to Georgia; west to Utah and Colorado; Canada in June and July; New York also in September.

The type of *obscura* is in the Edwards collection.

A. dactylina Grt.*

1874. Grt., Proc. Bost. Soc. N. H., XVI, 239, *Apatela*.

1875. Morr., Psyche, I, 42, *Apatela*.

1883. Grt., Papilio, III, 111, *Apatela*.

1885. Dimmock, A. K., Psyche, IV, 274, larva.

1892. Edw., and Elliott, Bull. Am. Mus. Nat. Hist., IV, 77, larva.

HABITAT.—Canada to District of Columbia; west to Colorado; Minnesota; Massachusetts in June; Canada in July.

A. hastulifera S. & A.*

1797. S. & A., Ins. Ga., II, 183, pl. 92, *Phalæna*.
 1852. Gn., Spec. Gen., Noct., I, 47, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 56, *Acronycta*.
 1874. Lintner, Ent. Cont., III, 158, larva.

HABITAT.—New York to Georgia; Central States; Canada in June.

A. inalta Wlk.

1856. Wlk., C. B. Mus., Het., IX, 61, *Acronycta*.
 1883. Grt., Papilio, III, 111, *Apatela*.

HABITAT.—Canada; Eastern and Middle States.

A. acericola Gn.

1852. Gn., Spec. Gen., Noct., I, 48, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 57, *Acronycta*.
aceris† S. & A.
 1797. S. & A., Ins., Ga., II, 184, pl. 93, *Phalæna*.
 1852. Gn., Spec. Gen., Noct., I, 48, pr. syn.
hastulifera† larva, S. & A.
 1797. S. & A., Ins. Ga., II, 183, pl. 92, larva.
 1852. Gn., Spec. Gen., Noct., I, 48, larva *acericola*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 154, *Acrony*

HABITAT.—Georgia; Virginia.

It is questionable whether the above synonymy can be considered settled; but it is a matter to be determined by the monographer of the genus and not by the catalogue maker.

A. impressa Wlk.*

1856. Wlk., C. B. Mus., Het., IX, 61, *Acronycta*.
 1882. Grt., Ill. Essay, 38, = *brumosa*.
 1887. Butler, Ent. Amer., III, 35, *Acronycta*.
fasciata Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 62, *Acronycta*.
 1882. Grt., Ill. Essay, 39 = *brumosa*.
 1887. Butler, Ent. Amer., III, 35, = *impressa*.
brumosa† Grt., in lists.
 1875. Speyer, Stett. Ent., Zeit., XXXVI, 109, *Acronycta*.
 1881. Coquillett, Papilio, I, 56, larva.
 1883. Saund., Fruit Insects, 313, f. 325, larva.
 1885. Dimmock, A. K., Psyche, IV, 274, larva.
 1887. Butler, Ent. Amer., III, 35, = *impressa*.
cerrillii G. & R.
 1870. G. & R., Trans. Am. Ent. Soc., III, 178, pl. ii, f. 82, *Acronycta*.
 1875. Morr., Can. Ent., VII, 79 = *A. innotata*.
 1875. Morr., Ann. Lyc. Nat. Hist. N. Y., XI, 92 = *brumosa*.
 1875. Morr., Psyche, I, 42 = *brumosa*.

HABITAT.—Canada to Florida, to Wisconsin, to Mississippi; Central States; Canada, May to August; New York, July and August; Minnesota in June; Glenwood Springs, Colorado, in August.

The type of *rerrillii* is in the collection of the American Entomological Society, and is the *brumosa* of the same collection, the latter labeled by Grote. The synonymy above given is after Butler.

A. distans Grt

1879. Grt., Can. Ent., XI, 38, *Apatela*.

HABITAT.—Canada.

A. rubricoma Gn.*

1852. Gn., Spec. Gen., Noct. I, 49, *Acronycta*.

1856. Wlk., C. B. Mus., Het., IX, 57, an sp. dist., *acericola*?

HABITAT.—Canada; Middle and Southern States.

A. luteicoma G. & R.*

1870. G. & R., Trans. Am. Ent. Soc., III, 179, pl. ii, f. 83, *Acronycta*.

1883. Thaxter, Papilio, III, 16, *Acronycta*.

HABITAT.—Canada; Northern and Middle States to Colorado; Minnesota in June; Massachusetts in June; Portland, Oregon, in May.

A. impleta Wlk.*

1856. Wlk., C. B. Mus., Het., IX, 57, *Acronycta*.

subochrea Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 153, *Acronycta*.

1875. Grt., Can. Ent., VII, 227, pl. i, f. 10, *Apatela*.

1887. Butler, Ent. Amer., III, 36, pr. syn.

HABITAT.—Canada in July; Eastern, Middle and Central States; New York in May and June.

A. perdita Grt.*

1874. Grt., Can. Ent., VI, 154, *Acronycta*.

HABITAT.—California in June.

A. afflicta Grt.*

1864. Grt., Proc. Ent. Soc. Phil., II, 438, pl. ix, f. 4, *Acronycta*.

1870. Grt., Trans. Am. Ent. Soc., III, 179, *Acronycta*.

1883. Thaxter, Papilio, III, 17, larva.

HABITAT.—Middle, Southern and Central States; Massachusetts in June; Texas in March; Canada.

A. noctivaga Grt.*

1864. Grt., Proc. Ent. Soc. Phil., II, 437, pl. ix, f. 3, *Acronycta*.

1869. Bethune, Can. Ent., I, 71, *Acronycta*.

1883. Thaxter, Papilio, III, 15, life history.
longa Wlk.

1856. Wlk., C. B. Mus., Het., IX, 60, *Acronycta*.

1868. G. & R., Trans. Am. Ent. Soc., II, 77, pr. syn.

1887. Butler, Ent. Amer., III, 36, pr. syn.

HABITAT.—Canada to Southern and Central States; Colorado; New Mexico; Canada, June to August; Massachusetts and New York, May and June; Portland, Oregon, April and May.

Mr. Grote's type is in the collection of the American Entomological Society.

A. brumosa Gn.*

1852. Gn., Spec. Gen., Noct., i, 52, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., ix, 59, *Acronycta*.
longa Gn.
 1852. Gn., Spec. Gen., Noct., i, 54, *Acronycta*.
 1869. Bethune, Can. Ent., i, 71, *Acronycta*.
 1887. Butler, Ent. Amer., iii, 36, pr. syn.
peruana Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., ii, 271, *Apatela*.
 1887. Butler, Ent. Amer., iii, 36, pr. syn.

HABITAT.—Southern States; Colorado; New Mexico; Texas in March.

Mr. Butler does not make the reference of *longa* to *brumosa* very positive and does so without a comparison of types.

A. superans Gn.*

1852. Gn., Spec. Gen., Noct., i, 53, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., ix, 56, *Acronycta*.
 1869. Bethune, Can. Ent., i, 85, *Acronycta*.
 1875. Morr., Psyche, i, 42, *Apatela*.
 1881. Coquillett, Papilio, i, 6, larva.
 1883. Saunders, Fruit Insects, 166, f. 174, 175, larva.

HABITAT.—Canada; Eastern, Middle, and Central States; Canada and New York, June and July.

A. connecta Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 79, *Acronycta*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States; Canada in August.

A. funeralis G. & R.

1866. G. & R., Proc. Ent. Soc. Phil., vi, 17, pl. iii, f. 8, *Acronycta*.
 1870. G. & R., Trans. Am. Ent. Soc. iii, 179, *Acronycta*.
 1874. Lintner, Ent. Cont., iii, 135, 157, larva sub nom., *americana*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 111, *Acronycta*.
 1875. Grt., Check List, Noct., pl. f. 1, *Apatela*.
 1883. Grt., Papilio, iii, 111, *Jochearea*.
americana † Harr.
 1869. Harris, Ent. Corr., 313, pl. iii, f. 3, larva only.
 1874. Lintner, Ent. Cont., iii, 157, pr. syn.

HABITAT.—Maine to Iowa; Eastern, Middle, and Central States.

A. ovata Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 80, pl. ii, f. 14, *Acronycta*.
 1883. Grt., Papilio, iii, 112, *Lepitoreuma*.

HABITAT.—New York to Texas; Central States; Northern States in June; Texas in July.

The type is in the collection of the American Entomological Society.

A. modica Wlk.*

1856. Wlk., C. B. Mus., Het., IX, 56, *Acronycta*.

1887. Butler, Ent. Amer., III, 36, *Acronycta*.
exilis Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 197, *Acronycta*

1883. Grt., Papilio, III, 112, *Lepitoreuma*.

1887. Butler, Ent. Amer., III, 36, pr. syn.

HABITAT.—Massachusetts to Minnesota to Texas; Northern States in June.

A. increta Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 131, *Acronycta*.

1883. Grt., Papilio, III, 112, *Lepitoreuma*.

HABITAT.—Middle States, New Mexico.

The type is in the Tepper collection.

A. hamamelis Gn.*

1852. Gn., Spec. Gen., Noct., I, 52, *Acronycta*.

1856. Wlk., C. B. Mus., Het., IX, 59, *Acronycta*.

1877. Good., Can. Ent., IX, 61, larva.

1883. Grt., Papilio, III, 112, *Lepitoreuma*.

1887. Butler, Ent. Amer., III, 36, *Acronycta*.

clarescens Gn., nec Grt.

1852. Gn., Spec. Gen., Noct., I, 54, *Acronycta*.

1856. Wlk., C. B. Mus., Het., IX, 60, *Acronycta*.

1887. Butler, Ent. Amer., III, 36, pr. syn.

HABITAT.—Canada to Texas; Central States. Northern States, June and July; Texas, March, April, and July.

A. hœsitata Grt.*

1882. Grt., Bull. Geol. Surv., VI, 575, *Apatela*.

1883. Grt., Papilio, III, 112, *Lepitoreuma*.

HABITAT.—Canada; New York to Texas; Central States.

A. pruni Harr.*

1869. Harris, Ent. Corr., by Scudder, 313, pl. iv, f. 13, larva.
clarescens† Grt., in lists et coll.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 4, *Apatela*.

1887. Butler, Ent. Amer., III, 36, not *clarescens* Gn.

HABITAT.—Nova Scotia to Southern and Central States.

The Harris specimens are in the collection of the Boston society, numbered 32. They are undoubtedly what Mr. Grote has named *clarescens* in American collections, but which Mr. Butler shows is not Guenée's species. As Mr. Grote's determination is incorrect, the species is nameless and Dr. Harris's name becomes available.

A. retardata Wlk.*1861. Wlk., Can. Nat. and Geol., vi, 38, † *Microcalia*.1871. Grt., Can. Ent., ix, 26 = *dissecta*.*dissecta* G. & R.1870. G. & R., Trans. Am. Ent. Soc., iii, 178, pl. ii, f. 81, *Acronycta*.1883. Grt., Papilio, iii, 113, *Lepitoreauma*.

HABITAT.—Canada, Northern, Eastern, Middle, and Central States. Canada and Northern States, June and July.

The type of *dissecta* is in the collection of the American Entomological Society. Mr. Grote himself stated the identity of *dissecta* with *retardata*, yet nevertheless continued to use the former term. The type of *retardata* is in the collection of the Entomological Society of Ontario.

A. sperata Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 81, pl. ii, f. 1, *Acronycta*.1883. Grt., Papilio, iii, 113, *Arctomyesis*.

HABITAT.—Eastern, Middle, and Central States, to Colorado; Northern States, May to August; Canada.

The type is in the collection of the American Entomological Society.

A. edolata Grt.*1881. Grt., Papilio, i, 153, *Apatela*.1882. Grt., Ill. Essay, 49, pl. i, f. 4, *Mastiphanes*.

HABITAT.—Arizona; Colorado.

A. extricata Grt.1882. Grt., Bull. Geol. Surv., vi, 575, *Apatela*.1883. Grt., Papilio, iii, 113, *Mastiphanes*.

HABITAT.—Texas.

A. pallidicoma Grt.*1878. Grt., Bull. Geol. Surv., iv, 169, *Apatela*.

HABITAT.—Eastern, Middle, and Central States to Kansas; Canada in May, June, and August.

A. xyliniformis Gn.*1852. Gn., Spec. Gen., Noct., i, 56, *Acronycta xylinoides*.1852. Gn., Spec. Gen., Noct., iii, 400, *xyliniformis*.1856. Wlk., C. B. Mus., Het., ix, 60, *Acronycta*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 81, note 11, *xylinoides*.1873. Riley, 5th Rept. Ins. Mo., 126, *xylinoides*, larva.1885. Dimmock, A. K., Psyche, iv, 274, *Apatela*.

HABITAT.—New York to Florida; Texas in July and August.

A. lithospila Grt.*1874. Grt., Proc. Bost. Soc. N. H., xvi, 240, *Acronycta*.

1883. Hy. Edw., Papilio, iii, 132, larva.

HABITAT.—Northern, Middle, and Central States; Massachusetts in June.

A. oblineata S. & A.*

1797. S. & A., Ins. Ga., II, 187, pl. 94, *Phalæna*.
 1852. Gn., Spec. Gen., Noct., I, 49, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 58, *Acronycta*.
 1871. Saund., Can. Ent., III, 226, figd.
 1871. Riley, Amer. Ent., II, 341, f. 210, larva.
 1871. Riley, 3d Rept., Ins. Mo., 70, f. 29, 30, all stages.
 1874. Lintner, Ent. Cont., III, 159, larva.
 1875. Gentry, Proc. Ac. Nat. Sci. Phil., 1875, 24, larva.
 1878. Goodell, Can. Ent., X, 66, larva.
 1882. Grt., Papilio, II, 99, larva.
 1883. Grt., Papilio, III, 113, *Eulonche*.
 1883. Saund., Fruit Ins., 325, f. 337, all stages.

HABITAT.—Nova Scotia to Florida; Central States, May to August; Northern States, May to August; Riley Co., Kansas, in May.

This species has quite a large economic bibliography, which is partly given in Mr. Edwards's catalogue of early stages.

A. lanceolaria Grt.*

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 418, *Apatela*.
 1882. Grt., Ill. Essay, 50, pl. i, f. 7, *Eulonche*.
 1883. Grt., Papilio, III, 113, *Eulonche*.

HABITAT.—Massachusetts in August.

The type is in the British Museum.

A. insolita Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 82, *Acronycta*.
 1883. Grt., Papilio, III, 113, *Eulonche*.

HABITAT.—Middle States.

The type is in the British Museum.

A. interrupta Gn.

1852. Gn., Spec. Gen., Noct., I, 46, *Acronycta*.
 1856. Wlk., C. B. Mus., Het., IX, 55, *Acronycta*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 78, note 4, *Acronycta*.

HABITAT.—"Georgia; Am. Sept."

This has not been identified in American collections; it was described from a figure by Abbot, and Guenée expresses himself as uncertain whether it really belongs to this genus.

A. declarata Wlk.

1856. Wlk., C. B. Mus., Het., IX, 61, *Acronycta*.

HABITAT.—Canada.

Described as a black species with white markings, and probably not an *Acronycta* at all. I did not see it in the British Museum.

[Since the above note went to the printer, Mr. Schaus has sent me a very good figure made from the type, which is at Oxford, which proves

the species to be *Mamestra adjuncta* Bdv., the latter name taking precedence.]

A. simplex Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 618, *Acronycta*.

HABITAT.—Vancouver.

To Mr. Butler's kindness I owe a rough sketch of this species which shows a form totally unlike any known to me, and looks rather like a pale Hadenid than an *Acronycta*. [It is *Xylomiges crucialis*.]

A. salicis Harr.

1869. Harr., Ent. Cont., 314, f. 44, larva only.

HABITAT.—Massachusetts.

Described from the larva only. I have no note of seeing any specimens under this name in the Harris collection.

Genus **HARRISIMEMNA** Grt.

1873. Grt., Trans. Am. Ent. Soc., iv, 293.

H. trisignata Wlk.*

1856. Wlk., C. B. Mus., Het., ix, 29, *Grammophora*.

1873. Grt., Trans. Am. Ent. Soc., iv, 293, *Harrisimemna*.

1882. Grt., Ill. Essay, 49, pl. i, f. 3, *Harrisimemna*.

1886. Goodhue, Can. Ent., xviii, 58, larva on lilac.

serguitata Harr.

1869. Harr., Ent. Corr., 174, f. 24, 25, *Notodonta*.

1873. Grt., Trans. Am. Ent. Soc., iv, 293, pr. syn.

HABITAT.—Canada in July; New York; Pennsylvania; Massachusetts in June; Texas.

Walker's type is in the British Museum.

Genus **CERMA** Hbn.

1816. Hbn., Verzeichniss, 207.

C. cora Hbn.*

1818. Hbn., Zutræge, i, 14, ff. 59, 60, *Cerma*.

1816. Hbn., Verzeichniss, 207, *Cerma*.

1852. Gn., Spec. Gen., Noct., i, 31, *Grammophora*.

1866. Wlk., C. B. Mus., Het., ix, 29, *Grammophora*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 14, *Lamprosticta*.

1880. Grt., Can. Ent., xii, 86, *Cerma*.

1882. Smith, Bull. Bkln. Ent. Soc., v, 38, *Bryophila*.

seta Gn.

1852. Gn., Spec. Gen., Noct., ii, 57, pl. 7, f. 5, *Charipiera*.

1857. Wlk., C. B. Mus., Het., xi, 535, *Lamprosticta*.

1890. Grt., Can. Ent., xii, 86, pr. syn.

1881. Grt., Bull. Geol. Surv., vi, 570, pr. syn.†

HABITAT.—Canada; Maine to Georgia.

The species was described from the Guerin collection by Guenée, and I have not seen the type.

C. olivacea Smith. *

1891. Smith, Trans. Am. Ent. Soc., XVIII, 103, *Cerma*.

HABITAT.—Colorado, Glenwood Springs, September and October; Sierra Nevada, California.

Types are in the National Museum and in the Edwards collection.

Genus **POLYGRAMMATE** Hbn.

1816. Hbn., Verzeichniss, 203.

P. hebraicum Hbn. *

1818. Hbn., Zutræge, I, 10, ff. 25, 26, *Polygrammate*.

1816. Hbn., Verzeichniss, 203, *Polygrammate*.

1880. Grt., Can. Ent., XII, 85, *Polygrammate*.

1882. Smith, Bull. Bkln. Ent. Soc., v, 30, *Bryophila*.
hebraea Gn.

1852. Gn., Spec. Gen., Noct., I, 31, pl. 3, f. 5, *Grammophora*.

1856. Wlk., C. B. Mus., Het., IX, 29, pr. syn.

HABITAT.—Massachusetts, in July; New York; District of Columbia in August; Florida; Texas.

Genus **MICROCELIA** Gn.

1852. Gn., Spec. Gen., Noct., I, 33.

M. fragilis Gn. *

1852. Gn., Spec. Gen., Noct., I, 34, *Microcelia*.

1856. Wlk., C. B. Mus., Het., IX, 31, *Microcalia*.

1864. Grt., Proc. Ent. Soc. Phil., III, 80, *Microcalia*.

1875. Morr., Psyche, I, 42, *Microcalia*.
spectans Wlk.

1861. Wlk., Can. Nat. and Geol., VI, 38, † *Bryophila*.

1877. Grt., Can. Ent., IX, 27, pr. syn.

HABITAT.—Canada in June and July; Northern, Middle, and Central States; Northern States in July and August.

Guenée's type is in the British Museum; Walker's species is in the collection of the Entomological Society of Ontario, and was compared by Mr. Grote.

M. diphteroides Gn. *

1852. Gn., Spec. Gen., Noct., I, 34, pl. 3, f. 7, *Microcalia*.

1856. Wlk., C. B. Mus., Het., IX, 31, *Microcalia*.

1864. Grt., Proc. Ent. Soc. Phil., III, 78, pl. 2, f. 2, *Microcalia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 195, pl. 3, f. 69, *Microcalia*.
var. *obliterata* Grt. *

1864. Grt., Proc. Ent. Soc. Phil., III, 79, *Microcalia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 195, pl. 3, f. 70, *Microcalia*.

HABITAT.—Canada, in June, to Virginia, west to Wisconsin, Missouri, Iowa; Kansas; New York; Massachusetts in June and July; Riley Co., Kansas, in April.

Guenée's type is in the British Museum, where there is also a specimen of Mr. Grote's species, without a "type" label.

Genus *BRYOPHILA* Tr.

1826. Tr., Schmett. Eur., v, 57.

B. lepidula Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 23, *Jaspidea*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, pl. i, f. 3, *Jaspidea*.1875. Grt., Stett. Ent. Zeit., xxxvi, 196, *Jaspidea*.1881. Grt., Bull. Geol. Surv., VI, 570, *Bryophila*.

HABITAT.—Canada in July and August; Maine to New Jersey; Pennsylvania; Minnesota; Missouri; Colorado; New York, June, July, and August; Delaware in July.

The type is in the British Museum.

B. corticosa Gn.1852. Gn., Spec. Gen., Noct., I, 30, *Bryophila*.1856. Wlk., C. B. Mus., Het., IX, 27, *Bryophila*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 8, *Jaspidea*.1881. Grt., Bull. Geol. Surv., VI, 570, *Bryophila*.

HABITAT.—“Am. Sept.”

The type is with M. Oberthür, and the species is as yet unidentified in our collections.

B. viridata Harv.1876. Harv., Can. Ent., VIII, 35, *Jaspidea*.1882. Grt., New List, 23, *Bryophila*.

HABITAT.—California.

The type is in the Edwards collection.

B. teratophora H. Sch.*1853. H. Sch., Exot. Schmett., 80, f. 213, *Bryophila*.1856. Wlk., C. B. Mus., Het., IX, 27, *Bryophila*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 8, *Jaspidea*.
inscripta Wlk.1857. Wlk., C. B. Mus., Het., XII, 808, *Erastria*.

1868. G. and R., Trans. Am. Ent. Soc., II, 78, pr. syn.

HABITAT.—Canada to Texas; Illinois; Iowa, June to August.

Walker's type is in the British Museum, and certainly agrees well with what we have as *teratophora*. The type of the latter I have not seen.

B. nana Hbn.1818. Hbn., Zuträge, I, 14, ff. 53, 54, *Cryphia*.1816. Hbn., Verzeichniss, 205, *Cryphia*.1852. Wlk., C. B. Mus., Het., IX, 26, *Bryophila*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 8, *Jaspidea*.

HABITAT.—“Georgia in Florida.”

This species has not been identified in our collections. It does not look like a *Bryophila* and may not be North American at all. Yet on the other hand the species may turn up again when the Southern States are well collected over.

Genus **CYATHISSA** Grt.

1881. Grt., Bull. Geol. Surv., vi, 576.

C. percara Morr. *1874. Morr., Proc. Bost. Soc. N. H., xvii, 213, *Bryophila*.1875. Grt., Proc. Bost. Soc. N. H., xviii, 414 *Bryophila*.1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 308, *Jaspidea*.1881. Grt., Bull. Geol. Surv., vi, 576, *Cyathissa*.

HABITAT.—Florida; Texas, March to May and September; Colorado.

The type is probably at Cambridge; but I have no memorandum of having seen it there.

Genus **CHYTONIX** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 66.

C. palliatricula Gn.*1852. Gn., Spec. Gen., Noct., i, 26, *Bryophila*.1856. Wlk., C. B. Mus., Het., ix, 26, *Bryophila*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 66, *Chytonix*.1877. Grt., Can. Ent., ix, 196, *Chytonix*.1883. Grt., Proc. Am. Phil. Soc., xxi, 155, *Bryophila*.
iaspis Gn.1852. Gn., Spec. Gen., Noct., i, 209, *Apamea*.1856. Wlk., C. B. Mus., Het., ix, 250, *Apamea*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 66, *Chytonix*.

1881. Grt., Papilio, i, 49, ♀ pr. syn.

1882. Grt., New List, 23, pr. syn.

HABITAT.—Canada, May and June, to Virginia; Illinois; Minnesota; New York and Massachusetts in July; North Carolina in August.

Guenée's types are in the British Museum. In *palliatricula* the median space is largely white, else I see no difference. This is a variable feature in the species and is not sexual.

C. sensilis Grt.*1881. Grt., Papilio, i, 49, *Chytonix*.1882. Grt., Ill. Essay, 51, pl. i, f. 6, *Chytonix*.

HABITAT.—Massachusetts; New York; New Jersey.

The type is in the British Museum. The white spot in the median streak is a variable character. I have a compared specimen exactly like the type except in that respect. A typical specimen is in Dr. Thaxter's collection.

AGROTIS Auct.

The species classed under the above generic term have been monographically treated by me in *Bulletin No. 38 of the United States National Museum*, Washington, 1890, and in accordance with this revision, the collections in the Museum are arranged. I have carefully compared all the types in the European Museums with the characteristics

given for them, and have noted the discrepancies where such existed. It would be waste of space to cite this monograph for every species, and to the end of *Carneades*, the reference is understood even where not made. It is to be noted that I claim generic value for all the divisions proposed by me, and the title *Agrotis* Auct., is simply a convenient heading for this note.

Genus **RHYNCHAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 13.

R. gilvipennis Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., App., 24, *Agrotis*.

1874. Grt., Can. Ent., vi, 71, *Agrotis*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 301, *Agrotis*.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 117 = *chardinyi*.

1876. Grt., Stett. Ent. Zeit., xxxvii, 135 = *chardinyi*.

chardinyi † Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 117, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 14, *Rhynchagrotis*.

HABITAT.—Anticosti; Labrador; Canada; Maine; Vermont in July; Adirondack Mountains, New York, July and August.

I have compared the type of *gilvipennis* in the British Museum with a good series of the Siberian *chardinyi*, and find the two species distinct. The points of difference are numerous, and I have restored Mr. Grote's name. The reference to the synonymy was made by Mr. Morrison, accepted by Mr. Grote, and, without opportunity of comparing the Asiatic form, I followed these authors in my monograph. I have collected a considerable number of specimens of our American form and have examined many others without seeing any that agreed with Boisduval's species. A specimen marked "*gilvipennis* type" by Mr. Morrison, is in the National Museum.

R. rufipectus Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 165, *Agrotis*.

1876. Grt., Ann. Lyc. Nat. Hist., N. Y., xi, 304, *Agrotis*.

HABITAT.—Northern and Eastern States; New York in August, Lewis County in July; Colorado; Oregon; British Columbia; Los Angeles County, California, in October.

I have seen no types. Mr. Morrison states that he received the specimen from Mr. Grote, and the Grote collection contains specimens agreeing with my identification of the species in the U. S. National Museum.

R. brunneicollis Grt.*

1861. Grt., Proc. Ent. Soc. Phil., iii, 524, Pl. 5, f. 5, *Noctua*.

1869. Grt., Trans. Am. Ent. Soc., ii, 309, *Agrotis*.

HABITAT.—Canada, Northern, Eastern, and Middle States; west to Iowa, Nebraska, and Colorado; Albany, N. Y., June; Massachusetts in August; Canada, July to September; Vermont in September.

The type is in the collection of the American Entomological Society at Philadelphia, and specimens are in the British Museum, both agreeing with the specimens in the U. S. National Museum.

R. minimalis* Grt.

1879. Grt., No. Am. Ent., 1, 45, *Agrotis*.

HABITAT.—Maine, Colorado.

The type is in the British Museum and is like the species so named in the U. S. National Museum.

R. anchocelioides* Gn.

1852. Gn., Sp. Gen., Noct., 1, 384, *Cerastis*.

1857. Wlk., C. B. Mus., Het., x, 452, *Cerastis*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 26, *Glæa*.
cupida Grt.

1864. Grt., Proc. Ent. Soc. Phil., 111, 525, pl. 5, f. 7, *Noctua*.

1869. Grt., Trans. Am. Ent. Soc., 11, 309, *Agrotis*.

1874. Grt., Can. Ent., vi, 16, *Cerastis*.

1878. Grt., Can. Ent., x, 234, *Agrotis*.

1878. Lintn., Ent. Cont., iv, 124, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 383, *Amathes*.
velata Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 710, *Graphiphora*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 383 = *cupida*.
var. *brunneipennis* Grt.

1875. Grt., Can. Ent., vii, 187, *Agrotis*.

1878. Grt., Can. Ent., x, 234, an var. pr. ?

1883. Grt., Proc. Am. Phil. Soc., xxi, 155, *Agrotis*.

HABITAT.—Canada, Northern, Eastern, Middle, and Central States; Iowa; Nebraska; Colorado; New Mexico; Canada in July and August; Massachusetts in August; Illinois, New York, and District of Columbia in September.

Mr. Grote has utterly mistaken Guenée's species. One of the types or specimens from which the description was made is in the British Museum. It is a poor, somewhat rubbed specimen, but it is unquestionably Mr. Grote's *cupida*. The original type of *cupida* is in the collection of the American Entomological Society at Philadelphia and a duplicate "type" is in the British Museum. The type of *Graphiphora velata* Walker is also referable to the same species, as Mr. Butler has stated. The type of *brunneipennis* is with Mr. Thaxter and I have seen it in his collection.

R. placida* Grt.

1876. Grt., Ann. Lyc. Nat. Hist., N. Y., xi, 305, *Agrotis*.

1878. Grt., Can. Ent., x, 235, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 383 = *cupida*.

HABITAT.—Maine; New York, Lewis County, in July; Nevada; Colorado, Glenwood Springs in August and September; Utah; Arizona; New Mexico; Canada.

The type in the British Museum is like the species known to me under this name, and is not the same as *cupida*.

R. variata Grt.*

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 83, Pl. 4, f. 12, *Agrotis*
 1883. Grt., Proc. Am. Phil. Soc., XXI, 155, *Agrotis*.
 1889. Butler, Trans. Ent. Soc. Lond., 382 = *phyllophora*.
varix Grt.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 83, an var. pr. †
 1889. Butler, Trans. Ent. Soc. Lond., 382 = *phyllophora*.
orbis Grt.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 83, *Agrotis*.
 1878. Grt., Bull. Geol. Surv., IV, 174, *Agrotis*.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 155 = † *cupidissima*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 24 = *cupidissima*.

HABITAT.—Colorado; New Mexico; Nevada; Arizona; California; Vancouver; Glenwood Springs, Colorado, in September and October.

Types of each of these names are in the British Museum. Mr. Grote's remarks on his *orbis* thoroughly misled me, and I referred the name to *cupidissima*. As a matter of fact, the type of *orbis* is simply *variata* without the bluish scales, and one of the specimens labeled by Mr. Grote is typical *variata*. The specimens of *variata* in the collections U. S. National Museum are like the type.

R. alternata Grt.*

1864. Grt., Proc. Ent. Soc. Phil., III, 526, Pl. 5, f. 8, *Noctua*.
 1869. Grt., Trans. Am. Ent. Soc., II, 309, *Agrotis*.
 1874. Grt., Can. Ent., VI, 15, *Cerastis*.
 1874. Grt., Can. Ent., VI, 214, *Agrotis*.
 1878. Grt., Can. Ent., X, 235, *Agrotis*.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 155, *Agrotis*.
 1889. Butler, Trans. Ent. Soc. Lond., 382 = *phyllophora*.

HABITAT.—Canada, July to September; Middle and Northern Atlantic States, west to the Mississippi; Colorado; District of Columbia in June; New York in July and August; Illinois in September.

The type is in the collection of the American Entomological Society, and the species is well and correctly known to collectors generally.

R. belfragei Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 20, *Rhynchagrotis*.

HABITAT.—Texas, March to June.

The type is in collections U. S. National Museum.

R. trigona Smith* n. sp.

cupidissima † Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 24, *Rhynchagrotis*.

HABITAT.—California; Oregon; Colorado; Arizona; Kansas; British Columbia; Glenwood Springs, Colorado, in August.

Mr. Grote had named *cupidissima* in Mr. Neumoegen's collection, a series of specimens which I assumed were correctly determined. Interpreting Mr. Grote's descriptions by these specimens, I made *orbis* and *latula* synonyms of *cupidissima* in the monograph. The true *cupidissima* is very different from this species, and neither *orbis* nor *latula* agree at all with it. A new name for what I have erroneously characterized as Mr. Grote's species is therefore necessary, and I propose *trigona*, as above. The types of this species are the specimens named *cupidissima* by me in the collections U. S. National Museum.

R. bimarginalis Grt.

1883. Grt., Ann. & Mag., N. H., 1883, 53, *Agrotis*.

1883. Grt., Trans. Kans. Ac. Sci., VIII, 54 (*Reprint*).

HABITAT.—New Mexico.

I have seen one of the specimens marked "type" by Mr. Grote, in the Neumoegen collection, and Prof. Snow also has a specimen in his collection.

R. vittifrons Grt.

1864. Grt., Proc. Ent. Soc. Phil., III, 527, pl. 5, f. 8, *Noctua*.

1868. Grt., Trans. Am. Ent. Soc., II, 309, *Agrotis*.

HABITAT.—Colorado, Glenwood Springs in September.

The type is in the collection of the American Entomological Society. The specimen in the British Museum, labeled *vittifrons*, in Mr. Grote's handwriting, is incorrectly determined, and is *formalis*.

R. inelegans Smith.

1890. Smith, Trans. Am. Ent. Soc., XVII, 43, *Agrotis*.

HABITAT.—Sierra Nevada, California.

The type is in the collection of the late Mr. Henry Edwards.

R. mirabilis Grt.

1879. Grt., No. Am. Ent., I, 39, *Agrotis*.

HABITAT.—Colorado; Arizona; New Mexico.

The type in the British Museum agrees with the specimens I have seen in American collections.

R. carissima Harv.

1875. Harv., in Grote, Check List, 25, *Agrotis*.

HABITAT.—California.

The male type is in the British Museum, and had been heretofore unknown to me. It is broad-winged, somewhat like *Orthodes*, and quite unlike any other of the species of this genus. It has no very close allies, and is placed in the series here because the orbicular, so far as it is traceable, is complete.

R. exsertistigma Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 166, *Agrotis*.
 1875. Grt., Can. Ent., vii, 26 = *alternata*.
 1875. Grt., Can. Ent., vii, 101, ♀ an sp. dist. *alternata*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 303, an sp. dist.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 79, *Agrotis*.
 1887. Smith, Proc. U. S. Nat. Mus., x, 450, *Agrotis*.
observabilis Grt.
 1875. Grt., Can. Ent., vii, 144, *Agrotis*.
 1878. Grt., Bull. Geol. Surv., iv, 174, *Agrotis*.
 1887. Smith, Proc. U. S. Nat. Mus., x, 451, ♀ pr. syn.

HABITAT.—California.

The type of Mr. Morrison's species is now in the Graef collection. Mr. Grote's type in the British Museum is, as I suspected, the same thing, the *observabilis* of the Neumøgen collection being correctly determined. The specimens labeled *exsertistigma* by Mr. Grote, now in the British Museum, are reddish examples of *formalis*.

R. formalis Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 61, *Agrotis*.
 1878. Grt., Bull. Geol. Surv., iv, 174, *Agrotis*.
 1887. Smith, Proc. U. S. Nat. Mus., x, 450, *Agrotis*.
var facula Grt.*
 1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 82, *Agrotis*.
 1878. Grt., Bull. Geol. Surv., iv, 174, *Agrotis*.
 1887. Smith, Proc. U. S. Nat. Mus., x, 451, *Agrotis*.
insularis Grt.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 82, *Agrotis*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 31 = *formalis* var.
emarginata Grt.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 82, *Agrotis*.
 1878. Grt., Bull. Geol. Surv., iv, 174, *Agrotis*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 33, ♀ = *formalis* var.

HABITAT.—California, February, April to June, October, November; Vancouver; Portland, Oregon, in May and June; British Columbia.

Types of each of the above species are in the British Museum. A large series of bred specimens in the collections of the National Museum proves that the black-tipped collar is not a specific character in this species, and that the black filling in the cell around the ordinary spots is a variable quantity. The species named *facula* and *formalis* by me agree with the types. *Insularis* is a somewhat more evenly red brown form of *facula*, while *emarginata* is also the same species, but quite uniform in color, the ordinary spots faintly outlined by yellow scales.

R. costata Grt.*

1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 80, *Agrotis*.
exsertistigma † Grt.
 1875. Grt., Can. Ent., vii, 26, *Agrotis*.
 1887. Smith, Proc. U. S. Nat. Mus., x, 451, err. typ.
binominalis Smith.
 1887. Smith, Proc. U. S. Nat. Mus., x, 451, *Agrotis*.

HABITAT.—California; Washington; Vancouver.

The type of *costata* in the British Museum is a very poor specimen, without a head. The wings are, however, sufficiently characteristic to make it certain that it is the species I have called *binominalis*, specimens of which are in the U. S. National Museum, the type in the Tupper collection.

***R. laetula* Grt. ***

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 83, *Agrotis*.

1878. Grt., Can. Ent., x, 234=*cupidissima*.

1878. Grt., Bull. Geol. Surv., IV, 173, ♀ an sp. dist. *cupidissima*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 24 = *cupidissima*.
distracta Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 36, *Rhynchagrotis*.
observabilis† Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 454, *Agrotis*.

HABITAT.—Washington; Oregon; California.

The type of *laetula* is in the British Museum and is the same as the form named *distracta* by me.

***R. discoidalis* Grt.**

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 82, pl. 4, f. 9, *Agrotis*.

HABITAT.—Nevada; Portland, Oregon, in June.

This species has been correctly placed by me, as appears by the type, in the British Museum.

***R. cupidissima* Grt. ***

1875. Grt., Can. Ent., VII, 101, *Agrotis*.

1878. Grt., Can. Ent., x, 234, *Agrotis*.

1878. Grt., Bull. Geol. Surv., IV, 173, *Agrotis*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 155, *Agrotis*.

HABITAT.—California, July and September.

The type in the British Museum is nothing like the specimens so named by Mr. Grote in Mr. Neumoegen's collection, and which I accepted as correct. The real species I had not seen before. In size it is like *alternata* and there is a distinct blackish costal patch in the s. t. space preceding s. t. line. In the character of the ordinary spots it is nearest to *discoidalis*. I find four specimens of the species in the National Museum, which have been more recently added to the collection.

***R. crenulata* Smith. ***

1887. Smith, Proc. U. S. Nat. Mus., x, 451, *Agrotis*.

HABITAT.—California, June and July; Utah in June; Portland, Oregon, in May.

Types of this species are in the U. S. National Museum, and in Mr. Neumoegen's collection.

R. confusa Smith.1887. Smith, Proc. U. S. Nat. Mus., x, 452, *Agrotis*.*exsertistigma* † Grt.1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 79, pl. 4, f. 8, *Agrotis*.

1887. Smith, Proc. U. S. Nat. Mus., x, 452, pr. syn.

HABITAT.—Washington.

Types of this species are in the Tepper collection.

Genus **ADELPHAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 38.

A. stellaris Grt.1880. Grt., Can. Ent., XII, 153, *Agrotis*.**HABITAT.**—Nevada; Washington.

Types of this species are in the British Museum and also in Mr. Neumoege's collection. Mr. Grote usually marked "Type" all the specimens before him when describing a species, and these quite frequently belonged to more than one collection. It thus happens that the "type" may be in several collections as already indicated.

A. indeterminata Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 750, *Xylina*.*innotabilis* Grt.1874. Grt., Proc. Ac. Nat. Sci. Phil., xxvi, 202, *Agrotis*.1880. Grt., Can. Ent., XII, 154, *Agrotis*.*washingtoniensis* Grt.1881. Grt., Bull. U. S. Geol. Surv., VI, 259, *Agrotis*.1890. Smith, Bull. U. S. Nat. Mus., No. 38, 40, = *innotabilis*.**HABITAT.**—California; Washington; Vancouver.

Types of all these names are in the British Museum, and all are referable to the same species. Mr. Grote can not be blamed for not recognizing Walker's species in its generic disguise; but his name must be restored, nevertheless. The type resembles *innotabilis* rather than *washingtoniensis*.

A. quarta Grt.1883. Grt., Bull. Geol. Surv., VI, 258, *Agrotis*.**HABITAT.**—Sausalito, California.

The type in the British Museum represents a species I had not before seen. It has nothing in common with *baja* except its ground color and has the structural characters of the present genus, differing obviously from all the species.

A. prasina Fabr.*1787. Fabr., Mant. Ins., II, 169, *Noctua*.1852. Gn., Sp. Gen., Noct., II, 75, *Aplecta*.1857. Wlk., C. B. Mus., Lep. Het., XI, 550, *Eurois*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 163, *Eurois*.1875. Speyer, Stett. Ent. Zeit., XXXVI, 136, *Aplecta*.1875. Grt., Check List, Noct., *Agrotis*.*herbacea* Gn.1857. Gn., Sp. Gen., Noct., II, 73, *Polyphænis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, *Eurois*.

HABITAT.—Canada to Middle States, west to the Mississippi Valley; Iowa; Colorado; Glenwood Springs in August; Europe; Northern States, June to September.

The European synonymy and bibliography are not given. In the British Museum is a specimen marked *Polyphænis herbacea* in what appears to be Guenée's handwriting, and this agrees very well with his description. It is not the type. Guenée appears to have known *prasina* from North America, but a large bright-green specimen such as is sometimes met with might easily have misled him into considering this American form distinct. In the Cambridge Museum I have seen a specimen of *prasina* labeled *herbacea* by Mr. Grote; it is unspread and might easily serve as type of Guenée's description. The type is in collection "Marchand"; but what has become of this I do not know.

A. apposita Grt.*

1878. Grt., Bull. Geol. Surv., IV, 170, *Agrotis*.

1883. Grt., Papilio, III, 78, *Agrotis*.

HABITAT.—California; Vancouver; Colorado.

The type in the British Museum agrees very well with the specimens I have had before me from American collections.

Genus **PLATAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 43.

P. speciosa Hbn.*

1815. Hbn., Lep. Eur., Noct., 491, *Noctua*.

1816. Hbn., Verzeichniss, 218, *Eurois*.

1852. Gn., Sp. Gen., Noct., II, 80, *Aplecta*.

1857. Wlk., C. B. Mus., Het., XI, 553, *Eurois*.

1866. Moeschl., Wien. Ent. Monatschr., VIII, 196, *Agrotis*.

1883. Moeschl., Stett. Ent. Zeit., XLIV, 117, *Agrotis*.

perquirita Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 136, *Polia*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 37, pr. syn.

batleyana Grt.

1879. Grt., No. Am. Ent., I, 92, *Agrotis*.

1880. Grt., Can. Ent., XII, 185, pr. syn.

1880. Grt., Bull. Bkln. Ent. Soc., III, 37, pr. syn.

mirta Wlk.

1856. Wlk., C. B. Mus., Het., IX, 62, *Acronycta*.

1882. Grt., Ill. Essay, 39, pr. syn.

var. *arctica* Zett.

1839. Zett., Ins. Lapl., 339.

1864. Wlk., Stett. Ent. Zeit., 180, pr. var.

HABITAT.—Adirondack Mountains; White Mountains; Vermont; Canada; northern and mountainous Europe.

The bibliography of the variety *arctica* is from Staudinger, and the synonymy is well established. I have seen the Grote, Morrison, and Walker types, and there is no doubt of their identity. The Walker

type only is in the British Museum; Mr. Grote's type is in the Dr. Bailey collection at Albany; Mr. Morrison's type is in the Graef collection.

P. pressa Grt.*

1874. Grt., Trans. Am. Ent. Soc., v, 90, *Eurois*.

1875. Grt., Check List, pl. i, f. 7, *Eurois*.

1882. Grt., New List, 26, *Agrotis*.

HABITAT.—Canada in July; Massachusetts in June; New York in July and August. Northern, Eastern, Middle, and Central States.

The type specimen in the British Museum is like the examples representing this species in American collections.

P. condita Gn.*

1853. Gn., Sp. Gen., Noct., II, 78, pl. 8, f. 5, *Aplecta*.

1857. Wlk., C. B. Mus., Het., XI, 556, *Eurois*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, *Mamestra*.

1881. Grt., Can. Ent., XIII, 127, (transl. desc.).

1891. Smith, Proc. U. S. Nat. Mus., XIV, 270, ?=*trabalis*.
trabalis Grt.

1877. Grt., Can. Ent., IX, 198, *Agrotis*.

HABITAT.—Massachusetts in June; Canada; Middle, Eastern, and Northern States.

Guenée's type, as I suspected, is like Mr. Grote's species, the type of the latter being with Dr. Thaxter, in whose collection I have seen it.

P. sincera H.-Sch.

1851. H.-Sch., Eur. Schmett., II, 412, *Agrotis*.

HABITAT.—Labrador.

P. imperita Hbn.*

1823. Hbn., Zuträge, ff., 447, 448, *Ogygia*.

1857. Wlk., C. B. Mus., Het., X, 333, *Agrotis*.

1890. Grt., Can. Ent., XII, 118, *Agrotis*.

1883. Moeschl., Stett. Ent. Zeit., XLIV, 117, *Agrotis*.
comparata Moeschl.

1862. Moeschl., Wien. Ent. Monatschr., VI, 131, pl. i, f. 5, *Agrotis*.

1875. Grt., Check List, 6, pr. syn.

1883. Moeschl., Stett. Ent. Zeit., XLIV, 117, pr. syn.
saxigena Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 162, *Agrotis*.

1882. Grt., New List, 24, pr. syn.
disctincta Wlk.

1856. Wlk., C. B. Mus., Het., IX, 27, *Bryophila*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 8, *Jaspidia*.

1882. Grt., Ill. Essay, 40, ?*Agrotis*.

1891. Butler, Entomologist, XXIV, 238, pr. syn.

HABITAT.—H. B. Terr.; Labrador; mountains of Northern and Middle States.

Mr. Butler has correctly referred Walker's type. Mr. Moeschler agrees that his species is Hübner's *imperita*, and Mr. Morrison's type in the Graef collection also refers to this same species.

Genus **EUERETAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 47.

E. sigmoides Gn.*

1852. Gn., Sp. Gen., Noct., I, 325, *Noctua*.

1856. Wlk., C. B. Mus., Het., x 400, *Graphiphora*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 9, *Agrotis*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States, June to August.

The specimens in the U. S. Nat. Mus. collection, and in American collections generally, agree with the type which is in the British Museum.

E. perattenta Grt.*

1874. Grt., Can. Ent., VI, 131, *Agrotis*.

1882. Grt., Ill. Essay, 51, pl. I, f. 7, *Agrotis*.

HABITAT.—Canada; Maine to Texas; west to the Mississippi Valley; New York and Massachusetts in June, July, and August.

A specimen labeled *sigmoides* var., by Guenée, is like Mr. Grote's type, both in the British Museum.

E. attenta Grt.*

1874. Grt., Can. Ent., VI, 131, *Agrotis*.

HABITAT.—Northern and eastern United States; Canada; Maine in July.

The species is correctly named in American collections. The type is in the British Museum. A specimen marked "type" by Mr. Morrison is in the National Museum.

Genus **ABAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 49.

A. erratica Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 50, *Abagrotis*.

HABITAT.—Sierra Nevada, California, in September.

Types of this species are in the collection U. S. National Museum, and in those of Messrs. Edwards and Neumoegen.

Genus **SEMIOPHORA** Steph.

1829. Steph., Ill. Brit. Ent. Haust., II, 138.

S. elimata Gn.*1852. Gn., Sp. Gen., Noct., I, 333, *Noctua*.1856. Wlk., C. B. Mus., Het., X, 400, *Graphiphora*.1883. Grt., Bull. Geol. Surv., VI, 566, *Agrotis*.
dilucida Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., XXVII, 55, *Agrotis*.1878. Grt., Bull. Geol. Surv., IV, 170, *Agrotis*.1879. Butler, Trans. Ent. Soc. Lond., 1889, 385, pr. syn.
var. *badicollis* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 136, pl. 4, f. 18, *Ammaconia*.1875. Grt., Can. Ent., VII, pl. I, f. 12, *Agrotis*.1875. Morr., Proc. Ac. Nat. Sci. Phil., XXVII, 55, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 51, pr. syn.

var. *janualis* Grt.*1878. Grt., Bull. Geol. Surv., IV, 169, *Agrotis*.

1891. Smith, Bull. U. S. Nat. Mus., No. 38, 51, pr. syn.

HABITAT.—Maine to Georgia; Canada, July and August; New York, June to September; Washington, D. C., in September.

The types of Mr. Grote's species are in the British Museum, and so is also *elimata* Gn. With them are specimens labeled *dilucida* by Mr. Grote, and these are exactly like Guenée's species. Mr. Morrison labeled a number of specimens as "type" and I have seen several of them in collections. They include specimens like Guenée's type and also like Mr. Grote's *janualis*. Mr. Morrison pointed out some of the characters differentiating his species from *elimata*; but these are not essential. As the forms stand in the British Museum, they look like good species; *elimata* rather more gray with the markings well defined and the apices of primaries distinct; *badicollis* much like it in wing form and markings, but still paler and with a contrasting pale collar; *janualis* rounder winged, apices more obtuse, markings almost obsolete. In the large series in the U. S. National Museum the differences seem to vanish; but none of the specimens are like typical *badicollis*, which I never saw previously. Mr. Thaxter also has types of Mr. Grote's species. To differentiate the various forms I have given varietal rank to Mr. Grote's names. Dr. Lintner also has a "type" of *badicollis*.

S. opacifrons Grt.*1878. Grt., Bull. Geol. Surv., IV, 170, *Agrotis*.1890. Smith, Bull. U. S. Nat. Mus., No. 38, 97, *Noctua*.

HABITAT.—New York and northward.

The male type in the British Museum has pectinated antennæ and the wing form of *elimata*. The specimens before me when writing the monograph were females only, and I failed to recognize the true relationship of the species.

S. tenebrifera Wlk.*1865. Wlk., C. B. Mus., Het., xxxiii, 714, *Hadena*.1891. Smith, Can. Ent., xxiii, 120, *Semiophora*.
catherina Grt.1874. Grt., Can. Ent., vi, 116, *Matuta*.1875. Grt., Buff. Bull., i, 124, *Matuta*.1875. Grt., Can. Ent., vii, pl. i, f. 7, *Matuta*.1880. Grt., Can. Ent., xii, 187, *Agrotis*.1891. Smith, Can. Ent., xxiii, 120, pr. syn.
manifestolabes Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 166, *Agrotis*.1880. Grt., Can. Ent., xii, 187, = *catherina*.**HABITAT.**—Northern, Eastern, and Middle States; Canada; May.

The type of Walker's species, from the Bethune collection, is now in the collection of the National Museum. The specimen of *catherina* in the British Museum does not seem to be the type; but is the species Mr. Grote has always so determined. Mr. Morrison's type is now in the Tepper collection, and agrees in all respects with Mr. Grote's specimens, and of course, therefore, as well with Walker's.

Genus PACHNOBIA Gn.

1852. Gn., Sp. Gen., Noct., i, 341.

P. monochromatea Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 165, *Agrotis*.**HABITAT.**—Massachusetts, in June.

A specimen labeled by Mr. Morrison, and probably a type, is in the collection Boston Society of Natural History. A specimen labeled "type" is in the Neumogen collection.

P. manifesta Morr.1875. Morr., Proc. Bost. Soc. N. H., xviii, 116, *Agrotis*.**HABITAT.**—New Jersey; Long Island, New York.

The types are in the Tepper and Neumogen collections.

P. littoralis Pack.*1868. Pack., Proc. Bost. Soc. N. H., xi, 36, *Agrotis*.1871. Stgr., Cat. Lep. Eur., 114 = *Pachnobia carnea*?1891. Smith, Bull. U. S. Nat. Mus., No. 38, 205, *Agrotis*.**HABITAT.**—Labrador, Caribou Island.

The type of this species is in the Museum of Comparative Zoology at Cambridge. I failed to find the type at Salem, in the Peabody Museum; but matters were there in great confusion. Since that time the insects have been transferred to Cambridge, and what remains of the type is found there. Staudinger's suggestion that it may be a form of *carnea* is contradicted by the antennal characters; but the reference to *Pachnobia* is correct. It looks like *pectinata* Grt., with the maculation scarcely traceable, and there is no difficulty in recognizing the species. A specimen marked "type" by Mr. Morrison is in the National Museum.

P. pectinata Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 207, *Pseudorthosia*.

1876. Grt., Can. Ent., VIII, 17, *Choephora*.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 86, *Choephora*.

1882. Grt., New List, 31, *Pseudorthosia*.

ferruginoides Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 56, *Pachnobia*.

HABITAT.—Colorado, Hall Valley, August; Montana; Black Hills.

I was quite surprised to find that Mr. Grote's type in the British Museum was my species. The specimens originally labeled by me came from Dr. Hulst's collection. Afterwards I found in the Riley collection in the National Museum a specimen labeled by Mr. Morrison "*Pseudorthisia pectinata* type." I therefore did not describe the species in 1887 with the other species named by me. Subsequently I compared the specimen with the original description and concluded that it could not well be intended to apply to this species and renamed it. The National Museum specimen is labeled by me as type, and a "type" is also in the Tepper collection.

[A number of Colorado specimens seen recently make it certain that this is but a form of *littoralis* Pack. *Pectinata* may stand for the variety with distinct median lines.]

P. haesitans Wlk.

1856. Wlk., C. B. Mus., Het., x, 329, *Agrotis*.

HABITAT.—Rocky Mountains.

The type is a well-preserved male, the antennæ distinctly pectinated, the other characters as in *Pachnobia*, save that it has the aberrant, dull, ash-gray color of my *cinerascens*. It is not unlike this latter save in antennal characters. The median lines are single, t. p. line crenate, cell blackish between the ordinary spots.

P. salicorum Wlk.*

1857. Wlk., C. B. Mus. Het., xi, 717, *Hydraxia*.

1882. Grt., Ill. Essay, 42, *Pachnobia*.

orilliana Grt.

1875. Grt., Can. Ent., VII, 154, *Pachnobia*.

1875. Grt., Can. Ent., VII, 227, pl. i, f. 8 = *clariformis*.

1882. Grt., Ill. Essay, 42, pr. syn.

clariformis Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 162, *Agrotis*.

1875. Morr., Proc. Bost. Soc. N. H., XVIII, 115, *Agrotis*.

1890. Grt., Bull. Bkln. Ent. Soc., III, 36 = *orilliana*.

1882. Grt., Ill. Essay, 42 = *salicorum*.

HABITAT.—Massachusetts; Maine; White Mountains and Northward; Canada; Hudson Bay Terr., April and May.

Walker's type is in the British Museum; but I could not find any specimens labeled by Mr. Grote. Mr. Morrison's type is in the Tepper collection, Agricultural College, Michigan.

***P. okakensis* Pack.**1867. Pack., Proc. Bost. Soc. N. H., xi, 38, *Agrotis*.1875. Morr., Psyche, i, 42, *Agrotis*.**HABITAT.**—Labrador; Mount Washington, July 10.

The type is in the Museum of Comparative Zoölogy at Cambridge.

P. fishii* Grt.1878. Grt., Bull. Geol. Surv., iv., 175, *Agrotis*.**HABITAT.**—Oldtown, Maine.

The type is in the British Museum. I have correctly labeled a specimen in the National Museum with this name.

***P. elevata* Smith.**1891. Smith, Trans. Am. Ent. Soc., xviii, 104, *Pachnobia*.**HABITAT.**—Colorado.

The type is in Mr. Neumoegen's collection.

P. carnea* Thunb.

1788. Thunb., Mus. Nat. Ac. Ups., Diss., iv, p. 56, 72, f. 1.

1816. Hbn., Verzeichniss, 222, *Diarsia*.1852. Gn., Sp. Gen., Noct., i, 342, *Pachnobia*.1856. Wlk., C. B. Mus., Het., x, 415, *Pachnobia*.1860. Moeschl., Wien. Ent. Monatschr., iv, 163, *Pachnobia*.1866. Moeschl., Wien. Ent. Monatschr., viii, 197, *Pachnobia*.1868. Pack., Proc. Bost. Soc. N. H., xi, 39, *Agrotis*.1875. Grt., Psyche, i, 77, 100, *Agrotis*.1883. Grt., Proc. Am. Phil. Soc., xxi, 160, *Pachnobia*.*ab. cinerea* Stgr.1861. Stgr., Stett. Ent. Zeit., xxii, 369, *Pachnobia*.**HABITAT.**—Labrador; Lapland; Circumpolar; Mount Washington, N. H.

For the European synonymy and bibliography, Staudinger should be consulted. I have not seen Thunberg's original work. In the British Museum collections Mr. Butler has confused three species under this name.

P. cinerascens* Smith.1891. Smith, Trans. Am. Ent. Soc., xviii, 103, *Pachnobia*.**HABITAT.**—Alameda County, California, September and October.

The types are in the collections of the U. S. National Museum.

P. wockei* Moeschl.1862. Moeschl., Wien. Ent. Monatschr., vi, 130, pl. i, f. 1, 2, *Agrotis*.1883. Moeschl., Stett. Ent. Zeit., xliv, 117, *Agrotis*.*scropulana*, Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 165, *Agrotis*.1875. Morr., Psyche, i, 42, *Agrotis*.1875. Grt., Psyche, i, 77=*carnea*.

1875. Morr., *Psyche*, I, 85, an sp. dist.

1875. Grt., *Psyche*, I, 100=*carnea*.

1885. Smith, *Ent. Amer.*, I, 14, pr. syn.

1885. Smith, *Stett. Ent. Zeit.*, XLVI, 223, pr. syn.

HABITAT.—Mount Washington, N. H.; Labrador.

Mr. Moeschler's type has been in my hands and has been compared by me with Morrison's type from the Graef collection. The species is in the British Museum, mixed with *carnea*.

Genus **SETAGROTIS** Smith.

1890. Smith, *Bull. U. S. Nat. Mus.*, No. 38, 59.

S. planifrons Smith.

1890. Smith, *Trans. Am. Ent. Soc.*, XVII, 42, *Agrotis*.

HABITAT.—Northwest British Columbia.

The type is in Mr. Neumoegen's collection.

S. congrua Smith.*

1890. Smith, *Trans. Am. Ent. Soc.*, XVII, 43, *Agrotis*.

HABITAT.—Oregon.

The type is in the National Museum collection.

S. vernilis Grt.*

1879. Grt., *Can. Ent.*, XI, 57, *Agrotis*.

1879. Grt., *No. Am. Ent.*, I, 38, *Agrotis*.

1890. Smith, *Bull. U. S. Nat. Mus.*, No. 38, 42, *Adelphagrotis*.

HABITAT.—Colorado, Glenwood Springs in August and September; Nevada; Sierra Nevada, California.

S. infimatis Grt.

1890. Grt., *No. Am. Ent.*, I, 93, *Agrotis*.

1890. Smith, *Bull. U. S. Nat. Mus.*, No. 38, 42, *Adelphagrotis*.

HABITAT.—California; Washington.

The types of both *vernilis* and *infimatis* are in the British Museum, and both are males. The specimens I had theretofore seen were all females, and my guess as to the character of the male antenna proved erroneous. Removed to *Setagrotis*, the characters pointed out by me still hold to separate the species. From the two forms described by me they are entirely distinct.

Genus **AGROTIS** Ochs.

1816. Ochs., *Schmett. Eur.*, IV, 66.

A. badinodis Grt.*

1874. Grt., *Can. Ent.*, VI, 13, *Agrotis*.

HABITAT.—Maryland; New York; Canada; Middle, Eastern, and Northern United States in August and September; Texas in November.

The type is in Dr. Lintner's collection.

A. violaria G. & R.

1868. G. & R., Trans. Am. Ent. Soc., 1, 353, pl. 7, f. 59, *Agrotis*.

HABITAT.—Pennsylvania; Middle States.

The specimen in the British Museum is not the type. The type is in the Museum of Comparative Zoölogy at Cambridge, and is marked New York, Mrs. Bridgham. There is also a specimen in the collection of the American Entomological Society at Philadelphia, labeled by Mr. Grote; but not marked type. It is, however, likely that this specimen is the original of the figure illustrating the description.

A. aurulenta Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 215, *Agrotis*.

HABITAT.—Colorado, foot-hills near Denver, Platte Cañon, 6,500 feet; Omaha, Nebraska, in June; Arizona.

The types are in the National Museum collection.

A. ypsilon Rott.*

1776. Rott., Naturf., XLI, 141, *Noctua*.

1816. Hüb., Verzeichniss, 225, *Exarnis*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 135, *Agrotis*.

1883. Saund., Fruit Insects, 327, f. 338, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 380, *Peridroma*.

suffusa S. V.

1776. S. V., p. 80, *nomen Catalogi*.

1852. Gn., Sp. Gen., Noct., 1, 268, *Agrotis*,

1857. Wlk., C. B. Mus., Het., x, 309, *Agrotis*.

telifera Harr.

1841. Harr., Rept. Ins. Mass., *Agrotis*.

1842. Harr., Inj. Ins., 323, *Agrotis*.

1864. Grt., Proc. Ent. Soc. Phil., III, 95, pr. syn.

1868. Riley, Rept. Ins. Mo., 1, 28, 80, pl. 1, f. 8-10, *Agrotis*.

1881. Riley, Index and Suppl. to Mo. Repts., 55, pr. syn.

idonea Cram.

1782. Cram., Exot., III, 150, 275, f. H, *Phalæna*.

1852. Gn., Sp. Gen., Noct., 1, 269, pr. var.

1856. Wlk., C. B. Mus., Het., 309, pr. syn.

HABITAT.—United States and Canada, June to October; Europe.

This common and well-known species has a large European bibliography, and has been frequently described in all its stages in economic publications. What has been above given will serve to authenticate the synonymy so far as necessary here.

A. geniculata G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., 1, 349, pl. 7, f. 54, *Agrotis*.

HABITAT.—Northern, Eastern, and Middle States; Canada; Massachusetts in August; District of Columbia in September.

The specimen in the British Museum agrees with the determination usual in American collections, but it is not the type. The type is in

the collection of the American Entomological Society, labeled by Mr. Grote, but not marked "type." It seems to be the original of the figure cited above, and in view of Mr. Grote's statement, quoted in the preface hereto, must be considered "type."

***A. ingeniculata* Smith.**

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 216, *Agrotis*.

HABITAT.—Colorado.

The type is with Mr. J. Angelman, Newark. An exact duplicate is in the Coll. U. S. National Museum.

***A. bollii* Grt.**

1883. Grt., Bull. Geol. Surv., VI, 160, *Agrotis*.

hilaris || Grt.

1880. Grt., Can. Ent., XII, 153, *Agrotis*.

HABITAT.—Texas.

The type is in the British Museum, and is a very distinct species, which I had not before seen.

***A. dapalis* Grt.**

1883. Grt., Bull. Geol. Surv., VI, 582, *Agrotis*.

HABITAT.—Florida.

The type is with Dr. Thaxter, in whose collection I have seen it. It is altogether impossible to locate it generically because of its imperfect condition.

***A. hero* Morr.**

1876. Morr., Proc. Bost. Soc. N. H., XVIII, 238, *Agrotis*.

1880. Grt., Bull. Geol. Surv., VI, 160, *Agrotis*.

HABITAT.—Massachusetts.

I have never seen this species and do not know where the type can be found. It is not likely that this name refers to a form distinct from any other here given; but I can not at present place it.

***A. nanalis* Grt.**

1881. Grt., Can. Ent., XIII, 131, *Agrotis*.

HABITAT.—Nevada.

The type in the British Museum is evidently from Mr. Tepper. It is an imperfect female, with smooth front, no fore legs, and broad, frail wings. It is obscurely fuscous brown or black, ordinary spots fused as in *hollemanni*, but faint. I never before saw it, and without a male can not give it a definite place.

***A. tenuicola* Morr.**

1874. Morr., Proc. Bost. Soc. N. H., XVII, 163, *Agrotis*.

HABITAT.—New York.

It is more than likely that this will turn out a form of *Noctua conflua*; but I have nothing answering nearly enough to it to make sure. I am utterly in the dark as to the location of the type.

In both the Graef and Neumoegen collections there are specimens marked *tenuescens* Morr., type. These can not well have served as the types for the description of *tenuicola*, and are related to *simplaria* and *incivis* rather than *conflua*. I have adopted Mr. Morrison's name for the specimens so labeled.

Genus **PERIDROMA** Hbn.

1816. Hbn., Verzeichniss, 227.

P. occulta Linn.*

1767. Linn., Syst. Nat., iv, 514, *Noctua*.

1816. Hbn., Verzeichniss, 218, *Eurois*.

1852. Gn., Sp. Gen., Noct., II, 76, *Aplecta*.

1857. Wlk., C. B. Mus., Het., XI, 551, *Eurois*.

1874. Grt., Can. Ent., vi, 13, 70, *Eurois*.

1876. Speyer, Stett. Ent. Zeit., xxxvi, 204, *Aplecta*.
docilis Grt.

1883. Grt., Bull. Geol. Surv., vi., 259, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 143, = *perexcellens*.

HABITAT.—Northern and Eastern States; Canada; Colorado, Glenwood Springs in October; British Columbia; Massachusetts in June; Canada, New York and Illinois in August.

In the British Museum is a specimen marked *docilis* Grt. type, which is without any doubt a form of *occulta*. It is from Snow, Colorado, No. 894, and is entirely different from the specimen marked *docilis* in the Edwards collection. From the description and Mr. Grote's remarks on the species, I am persuaded that a form of *perexcellens* was really what Mr. Grote intended to describe and that Mr. Edwards's specimen represents the form to which the name should have been attached. The small specimen of *occulta*, similar in color, probably escaped notice among the other specimens and received the type label. It makes no practical difference which specimen is accepted as type, since in either case the name goes into the synonymy.

P. præfixa Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 117, *Agrotis*.

HABITAT.—Rocky Mountains.

The type is in the collection of Mr. Julius Meyer.

P. stricta Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 135, *Eurois*.

HABITAT.—New York in July; New Hampshire and Northern States; Canada; Colorado.

The type is in the National Museum.

P. grandipennis Grt.

1883. Grt., Ann. and Mag. N. H., 1883, 54, *Agrotis*.

1884. Grt., Trans. Kans. Ac. Sci., VIII, 54 (Reprint).

HABITAT.—New Mexico.

Types are in the Neumoegen and Snow collections.

P. saucia Hbn.*

1816. Hbn., Samml. Eur. Schmett., Noct., 378, *Noctua*.

1816. Hbn., Verzeichniss, 227, *Peridroma*.

1825. Tr., Schmett., Eur., v, 149, *Agrotis*.

1852. Gn., Sp. Gen., Noct., i, 271, *Agrotis*.

1856. Wlk., C. B. Mus., Het., x, 311, *Agrotis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 135, *Agrotis*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 134, *Agrotis*.

1883. Saund., Fruit Insects, 106, ff. 100—103, *Agrotis*.

inermis Harr.

1841. Harr., Rept. Ins. Mass., *Agrotis*.

1842. Harr., Inj. Ins., 323, *Agrotis*.

1869. Riley, 1st Rept. Ins. Mo., 72, pl. 1, ff. 1—4, *Agrotis*.

1873. Pack., Our Common Insects, 199, f. 240, *Agrotis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 135, pr. syn.

1876. Riley, 8th Rept. Ins. Mo., 37, ff. 24, 25, *Agrotis*.

1881. Riley, Index and Suppl. to Mo. Repts., 55, pr. syn.
ortonii Pack.

1869. Pack., 1st Rept. Peab. Ac. Sci., 63, *Agrotis*.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 210, pr. syn.

var. *margaritosa* Haw.

1810. Haw., Lepid. Britt., 157, *Noctua*.

1852. Gn., Sp. Gen., Noct., i, 271, pr. syn.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 134, var. pr.

HABITAT.—North and South America; Europe; Asia. Canada, July and August; New York and Illinois, August and September; District of Columbia, September and October; California in April and May.

This species has a large economic bibliography. In the British Museum Mr. Butler has placed a lightly-marked specimen of *turris* Grt., with typical *saucia* and has published them as identical. They differ structurally. A specimen labeled *inermis* is in the Harris collection at Boston.

P. rudens Harv.*

1874. Harv., Bull. Buff. Soc. Nat. Sci., ii, 271, *Agrotis*.

HABITAT.—Texas in December and May.

P. pellucidalis Grt.*

1883. Grt., Bull. Geol. Surv., vi, 567, *Agrotis*.

rudens Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 5, *Agrotis*.

HABITAT.—Texas in December and May; Colorado, Manitou in June.

The types of both the above species are in the British Museum, and are as identified in American collections.

P. incivis Gn.*

1852. Gn., Sp. Gen., Noct., I, 274, *Agrotis*.
 1856. Wlk., C. B. Mus., Het., x, 330, *Agrotis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 303, *Agrotis*.
 1874. Morr., Proc. Bost. Soc. N. H., XVII, 164, *Agrotis*.
 1880. French, Can. Ent., XII, 14 (larva sub nom. *lubricans*).
 1882. French, Can. Ent., XIV, 240, *Agrotis*.
alabamæ Grt.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 159, *Anicla*.
 1875. Grt., Can. Ent., VII, 102, pr. syn.

HABITAT.—Massachusetts in September; District of Columbia to Florida; Mississippi; Illinois; Texas, November, December, and June; California.

The types of both *incivis* and *alabamæ* are in the British Museum, and both names refer to the species known as *incivis* in our collections. I have not given the bibliography relating to *infecta* Ochs., and *præcox*† Hbn., because I consider the synonymy doubtful. It is given in the Bull. U. S. Nat. Mus., No. 38, p. 72.

P. tenuescens Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 73, *Peridroma*.

HABITAT.—Nebraska.

The types are in the Graef and Neumoegen collections, labeled by Mr. Morrison as types of the name, but not described.

P. simplaria Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 164, *Agrotis simplicius*.
 1875. Morr., Proc. Bost. Soc. N. H., XVII, 210, *Agrotis simplaria*.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 5, *Agrotis simplicia*.
 1890. Grt., Bull. Geol. Surv., VI, 108, *Agrotis*.

HABITAT.—Texas, March, April, October, and November.

The type, sub nom. *simplicius* is in the Museum of Comparative Zoölogy at Cambridge.

P. digna Morr.*

1875. Morr., Proc. Bost. Soc. N. H., XVIII, 115, *Agrotis*.
nigrovittata Grt.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 77, *Agrotis*.

HABITAT.—Texas, May and August.

Mr. Grote's type is in the British Museum; that of Mr. Morrison is in the Tepper collection. The two are specifically identical.

Genus **NOCTUA** Linn.

1758. Linn., Systema Naturæ.

N. baja Fabr.*

1787. Fabr., Mant. Ins., II, 175, *Noctua*.
 1791. Oliv., Enc. Meth., VIII, 345, *Noctua*.
 1793. Fabr., Ent. Syst., III, 2, 109, *Noctua*.
 1793. Gmel., ed. Linn. Syst. Nat., 2579, *Noctua*.

1816. Hbn., Verzeichniss, 222, *Amathes*.
 1834. Hbn., Schmett. Eur., Noct., iv, pl. 25, f. 119, *Noctua*.
 1852. Gn., Sp. Gen., Noct., i, 335, *Noctua*.
 1856. Wlk., C. B. Mus., Het., x, 396, *Graphiphora*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 122, *Agrotis*.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 80, *Agrotis*.

HABITAT.—United States and Europe; Northern States, July, August, and September.

N. normaniana* Grt.

1874. Grt., Trans. Am. Ent. Soc., v, 89, *Agrotis*.
triangulum † Auct.
 1852. Gn., Sp. Gen., Noct., i, 331, *Noctua*.
 1856. Wlk., C. B. Mus., Het., x, 390, *Graphiphora*.
 1868. Beth., Can. Ent., i, 86, *Graphiphora*.
 1874. Grt., Trans. Am. Ent. Soc., v, 89, pr. syn.
obtusa Speyer.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 124, 126, *Agrotis*, † pr. syn.
 1882. Grt., New List, 24, pr. syn.

HABITAT.—Northern, Middle, and Eastern States; Canada, July to September; New York, Illinois, Massachusetts, August and September; District of Columbia in September.

Mr. Grote's type is in the British Museum, and is correctly identified in American collections.

N. bicarnea* Gn.

1852. Gn., Sp. Gen., Noct., i, 329, *Noctua*.
 1856. Wlk., C. B. Mus., Het., x, 400, *Graphiphora*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 383, *Amathes*.
plagiata Wlk.
 1865. Wlk., C. B. Mus., Het., xxxii, 664, *Mamestra*.
 1882. Grt., Ill. Essay, 44, pr. syn.
 1889. Butl., Trans. Ent. Soc. Lond., 1889, 383, pr. syn.

HABITAT.—United States east of the Rocky Mountains; Colorado; British Columbia; Northern States, July to September.

Mr. Grote's reference of *plagiata* to *bicarnea* is correct. Both the types are in the British Museum.

N. treatli* Grt.

1875. Grt., Can. Ent., vii, 186, *Agrotis*.

HABITAT.—Massachusetts.

The specimen in the National Museum is like Mr. Grote's type in the British Museum, save that it is a much larger and finer example.

***N. conchis* Grt.**

1879. Grt., No. Am. Ent., i, 43, *Agrotis*.
 1880. Grt., Trans. Kans. Ac. Sci., vii, 66, *Agrotis*.
 1882. Grt., Ill. Essay, 51, pl. i, f. 8, *Agrotis*.

HABITAT.—Colorado; New Mexico.

The type is in the British Museum, and is well represented by the figure in the Illustrated Essay.

N. c-nigrum Linn.*

1758. Linn., Syst. Nat., ed. x, 516, *Noctua*.
 1767. Linn., Syst. Nat., ed. xii, 852, *Noctua*.
 1816. Hbn., Verzeichniss, 223, *Megasema*.
 1852. Gn., Sp. Gen., Noct., i, 328, *Noctua*.
 1856. Wlk., C. B. Mus., Het., x, 389, *Graphiphora*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 126, *Agrotis*.
 1883. Edw., Papilio, iii, 133, *Agrotis*.

HABITAT.—North America and Europe; New York, June to October; Illinois, August and September.

The economic bibliography is large, and the species is frequently referred to in publications in such manner only as not to merit citation here.

N. hospitalis Grt.

1882. Grt., Can. Ent., xiv, 184, *Agrotis*.
 1886. Grt., Can. Ent., xviii, 220=*perconflua*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 83, an sp. dist.

HABITAT.—Northern New York.

The type is in the collection of the late W. W. Hill, Albany, N. Y.

N. jucunda Wlk.*

1856. Wlk., C. B. Mus., Het., x, 399, *Graphiphora*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 382, *Amathes conflua*† Grt.
 1874. Grt., 6th Rept. Peab. Ac. Sci., App., 25, *Agrotis*.
 1874. Grt., Can. Ent., vi, 71, *Agrotis*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 382, pr. syn *perconflua* Grt.
 1876. Grt., Ann. Lyc. Nat. Hist. N. Y., xi, 304, *Agrotis*.
 var. *esurialis* Grt.
 1881. Grt., Can. Ent., xiii, 131, *Agrotis*.

HABITAT.—Northern and Eastern States; Canada and northward; Washington, August.

The type of *perconflua* is like the type of *jucunda*, and Mr. Grote's name sinks. *Perconflua* is undoubtedly the species Mr. Grote has written of as *conflua*; but the specimen in the British Museum, labeled *conflua* by Mr. Grote, is *rufifera*. The type of *esurialis*, also in the Museum, is without doubt the same species, differing only in that the orbicular is imperfectly closed superiorly; and the cell between the ordinary spots more prominent than usual. The specimen is from Washington, and is perhaps a good geographical race.

N. phyllophora Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 61, *Agrotis*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 382, *Amathes*.
 1891. Butler, Entomologist, xxiv, 238=*subporphyrea dahlia*† Beth.
 1868. Beth., Can. Ent., i, 86, *Graphiphora ericiensis* Grt.
 1878. Grt., Bull. Geol. Surv., iv, 172, *Agrotis*.

HABITAT.—Northern, Middle, and Eastern States; Canada in July; Massachusetts and New York, June and July.

Mr. Butler has succeeded in mixing up several distinct species under this name. *Subporphyrea*, *phyllophora*, *alternata*, and *variata* are all good species. On the other hand the type of *eriensis* is simply a somewhat suffused form, in which the basal and costal spaces are mottled with yellow.

N. rubifera Grt.*

1875. Grt., Can. Ent., VIII, 207, 227, pl. i, f. 14, *Agrotis*.

rubi † Grt.

1875. Grt., Can. Ent., VII, 207, *Agrotis*.

dahlis var. A, Gn.

1852. Gn., Sp. Gen., Noct., I, 332, *Noctua*.

1856. Wlk., C. B. Mus., Het., x, 393, *Graphiphora*.

HABITAT.—Northern and Eastern States; Canada, in July; New York, in August.

The type is in the British Museum, and is the species I have described in the monograph under this name.

N. oblata Morr.*

1875. Morr., Proc. Bost. Soc. N. H., XVIII, 116, *Agrotis*.

hilliana Harv.

1878. Harv., Can. Ent., x, 55, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 86, pr. syn.

HABITAT.—Anticosti; New York; Nevada; Sierra Nevada, California.

A specimen of *hilliana* marked "type" is in the British Museum, and another so marked is in Mr. Hill's collection. They agree with each other and also agree with specimens of the same species marked "*oblata* type," by Mr. Morrison. A number of good specimens are in the National Museum, agreeing with Dr. Harvey's types. The original type of *oblata* is in Dr. Strecker's collection.

N. rosaria Grt.*

1878. Grt., Bull. Geol. Surv., IV, 172, *Agrotis*.

HABITAT.—California; British Columbia; Colorado, August.

The type is in the British Museum. The male is very like the eastern *rubifera* ♂, and specimens of this sex resemble each other much more than do the females.

N. rava H. Sch.*

1850. H. Sch., Schmett. Eur., VI, 59, Suppl. f., *Agrotis*.

1860. Moeschl., Wien. Ent. Monatschr., IV, 367, *Agrotis*.

diseona † Pack.

1867. Pack., Proc. Bost. Soc. N. H., XI, 38, *Agrotis*.

umbrata Pack.

1867. Pack., Proc. Bost. Soc. N. H., XI, 37, *Agrotis*.

HABITAT.—Labrador; Nova Scotia.

Dr. Packard's type is in the Museum of Comparative Zoölogy, Cambridge.

N. fennica Tausch.*

1837. Eversm., Bull. Soc. Imp. Mosc., 1, t. 13, 4, *Noctua*.

1852. Gn., Sp. Gen., Noct., 1, 270, *Agrotis*.

1857. Wlk., C. B. Mus., Het., x, 311, *Agrotis*.

1874. Grt., Can. Ent., vi, 155, *Agrotis*.

intractata Wlk.

1857. Wlk., C. B. Mus., Het., xi, 884, *Hadena*.

HABITAT.—Northern New York, northward to Alaska; Canada in August; Massachusetts in September.

Mr. Walker's type in the British Museum is a very fair specimen and readily recognizable as *fennica*.

N. plecta Linn.*

1761. Linn., Fn. Suec., 321, *Noctua*.

1767. Linn., Syst. Nat., ed. xii, 2, 851, *Noctua*.

1816. Hbn., Verzeichniss, 223, *Ochropleura*.

1852. Gn., Sp. Gen., Het., 1, 326, *Noctua*.

1856. Wlk., C. B. Mus., Het., x, 406, *Ochropleura*.

1862. Grt., Proc. Ent. Soc. Phil., 1, 218, *Chersotis*.

1874. Morr., Psyche, 1, 22, *Agrotis*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 131, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 384, *Ochropleura*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 89, *Noctua*.

HABITAT.—Canada to Texas; Eastern United States; Europe; Canada, May to August; New York, June, July, to September.

None of the European synonymy is given, and the bibliography relating to *vicaria* Wlk., is also omitted as unnecessary.

N. collaris G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., 1, 348, pl. 7, f. 53, *Agrotis*.

HABITAT.—New York, northward to Canada; New York in July; Massachusetts in August; New Hampshire in September.

A specimen labeled by Mr. Grote, and probably the type, though not so marked, is in the collection of the American Entomological Society.

N. juncta Grt.

1878. Grt., Bull. Geol. Surv., iv, 171, *Agrotis*.

HABITAT.—Nova Scotia.

The male type is in the British Museum. It has all the structural characters of the present section, and is most nearly like *collaris*, yet distinct from anything I had before seen.

N. haruspica Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 212, *Agrotis*.

1875. Grt., Proc. Ac. Nat. Sci. Phil., 424, *Agrotis*.

1876. Grt., Bull. Geol. Surv., ii, 214, *Agrotis*.

1885. Smith, Ent. Amer., 1, 13, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 382, *Graphiphora*.

unimacula || Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 166, *Agrotis*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 212, n. b. 1.
grandis Speyer.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 122; var. *augur*.
 1876. Speyer, Stett. Ent. Zeit., xxxvii, 201; var. *augur*.
 1884. Moeschl., Verh., k. k. Zool.-Bot. Ges., 273; var. *augur*.
 1885. Smith, Ent. Amer., i, 13, an sp. dist. *augur*.
augur† Gn.

1852. Gn., Sp. Gen., Noct., i, 325, *Noctua*.
 1856. Wlk., C. B. Mus., Het., x, 387, *Graphiphora*.

HABITAT.—Northern and Eastern United States; Colorado; Utah; Montana; Canada, in July; New York, July and August.

The type is in the British Museum, and is like specimens with the same name in American collections.

N. sierræ* Harv.

1876. Harv., Can. Ent., viii, 37, *Agrotis*.

HABITAT.—Sierra Nevada, California; Colorado, August.

A specimen in the British Museum is marked "type," in Mr. Grote's handwriting. The species is in no doubt, and is well identified in the National Museum.

N. clemens* Smith.

1890. Smith, Trans. Am. Ent. Soc., xvii, 44, *Agrotis*.

HABITAT.—California, Placer County in June.

Types of this species are in the National Museum and in Mr. Neumoegen's collection.

N. clandestina* Harr.

1862. Harris, Inj. Ins. (Flint ed.), 448, life hist., *Noctua*.
 1869. Grt., Trans. Am. Ent. Soc., ii, 309, *Agrotis*.
 1869. Saund., Can. Ent., ii, 35, *Noctua*.
 1869. Riley, 1st Rept. Ins. Mo., 79, pl. i, f. 13, *Agrotis*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 143, *Noctua*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 131, 347, *Agrotis*.
 1881. Riley, Index and Suppl. to Mo. Repts., 55, *Agrotis*.
 1883. Saund., Fruit Insects, 108, f. 106, 107, *Agrotis*.
 1889. Butler, Trans. Ent. Soc. Lond., 381, = *Spalotis ravida*.
unicolor Wlk.
 1856. Wlk., C. B. Mus., Het., ix, 233, *Mamestra*.
 1869. G. & R., Trans. Am. Ent. Soc., ii, 77, pr. syn.
 1877. Grt., Can. Ent., ix, 28, pr. syn.
nigriceps Wlk.
 1865. Wlk., C. B. Mus., Het., xxxii, 659, *Mamestra*.
 1891. Smith, Can. Ent., xxiii, 119, pr. syn.

HABITAT.—United States, except Southern States and Pacific coast; Canada and Northern States in July and August.

Harris's type is in the Boston Society of Natural History, the type of *nigriceps* is in the National Museum from Dr. Bethune, the type of *unicolor* is in the British Museum. I have seen them all.

N. havtlæ Grt.*

1880. Grt., Bull. Geol. Surv., vi, 157, *clandestina* var.

1881. Grt., Papilio, i, 76, an sp. dist.

1881. Butler, Papilio, i, 169, an sp. dist.

HABITAT.—Southern California in June; Colorado.

The type is in the British Museum, and is like the National Museum material in this species.

N. subporphyrea Wlk.

1858. Wlk., C. B. Mus., Het., xiv, 1658, *Mythimna*.

1882. Grt., Ill. Essay, 41, ♀ *Agrotis*.

1891. Butler, Entomologist, xxiv, 238 = *Agr. phyllophora*.

HABITAT.—Georgia.

The female type in the British Museum represents a species I had not before seen. It is imperfect, lacking the abdomen; but the front is smooth; the foretibiae are spinose and the palpi are as in *clandestina*. It looks like a red *alternata* with all the maculation washed out, leaving only the slightly paler median lines. Mr. Butler has placed *phyllophora*, *alternata*, *varix*, and *variata* under this name as representing one species, and in the Entomologist, xxiv, 238, says: "Walker's type is slightly faded and without abdomen, but is certainly typical *A. phyllophora*, which it will probably supersede." This was published while I was in England, but I did not see it until after my return, else I would have made more detailed comparisons. The specimen did not even suggest *phyllophora* to me, and it can not be that species; first, because it has none of its characteristic markings, and second, because it is from Georgia, while *phyllophora* is decidedly a Northern insect, and has never, in my experience, been taken as far South as Washington, D. C., where there have been good collectors at work. I believe the specimen to be one of those taken by Abbot, and a species which has not been since found. Among the unpublished drawings by Abbot in the British Museum are a number of Noctuidæ that I never saw and that are certainly undescribed. Such species as *Varina ornata* Neum., described only a year or two ago, were figured and the habits noted by Abbot, and the specimens were afterward named by Walker. No one has since collected Lepidoptera systematically on Abbot's old ground, and when that is once done, I have no doubt that *subporphyrea* Wlk. will be rediscovered.

N. piscipellis Grt.

1878. Grt., Can. Ent., x, 233, *Agrotis*.

HABITAT.—Colorado; Nevada; Arizona.

The type is in the British Museum, and is like the specimens so named by me.

N. atrifrons Grt. *

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 97, *Agrotis*.

1883. Grt., Trans. Kans. Ac. Sci., VIII, 47, *Agrotis*.

HABITAT.—Colorado; Arizona; New Mexico.

The type is in the British Museum.

N. tepperi Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 452, *Agrotis*.

HABITAT.—Montana.

The type is in the Tepper collection.

N. lubricans Gn. *

1852. Gn., Sp. Gen., Noct., I, 323, *Noctua*.

1856. Wlk., C. B. Mus., Het., x, 398, *Graphiphora*.

1864. Grt., Proc. Ent. Soc. Phil., III, 525, = *clandestina*.

1869. Grt., Trans. Am. Ent. Soc., II, 309; an sp. dist.
associans Wlk.

1858. Wlk., C. B. Mus., Het., xv, 1683, *Mamestra*.
illapsea Wlk.

1857. Wlk., C. B. Mus., Het., xi, 744, *Graphiphora*.
var. *beata* Grt. *

1883. Grt., Ann. and Mag. N. H., 1883, 54, *Agrotis*.

1883. Grt., Trans. Kans. Acad. Sci., VIII, 54, *Agrotis*.

1885. Smith, Can. Ent., xvii, 6, pr. syn.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 96, pr. var.

HABITAT.—United States generally; Canada; Massachusetts, June to August; Texas, March, July; District of Columbia, May and September; New Mexico in August; Colorado, August.

The types of all save *beata* are in the British Museum. The type of *beata* was given me by Mr. Grote himself, years ago, and is now in the National Museum. All the names refer to the same species.

N. vocalis Grt.

1879. Grt., Can. Ent., xi, 56, *Agrotis*.

1882. Grt., Ill. Essay, 54, pl. II, f. 15, *Agrotis*.
invenusta Grt.

1883. Grt., Trans. Kans. Ac. Sci., VIII, 48, *Agrotis*.

HABITAT.—Colorado, August; Nevada; New Mexico.

The type of *vocalis* is in the British Museum; that of *invenusta* has been in my hands from an American collection; but I have no note as to its present location.

N. pallidicollis Grt.

1880. Grt., Bull. Geol. Surv., VI, 154, *Agrotis*.
cinereocollis Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 79, pl. 4, f. 6, *Agrotis*.

1880. Grt., Bull. Geol. Surv., VI, 154, n. b. I.

HABITAT.—California.

The type is in the Henry Edwards collection.

N. pyrophiloides Harv.*1876. Harv., Can. Ent., VIII, 37, *Agrotis*.1890. Smith, Bull. U. S. Nat. Mus., No. 38, 213, † *Agrotis*.**HABITAT.**—California.

The type is in the Henry Edwards collection. A well-named specimen, not the type, is in the British Museum.

The present location of the species is tentative merely.

Genus **CHORIZAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., 38, 98.

C. auxiliaris Grt.*1872. Grt., Bull. Buff. Soc. Nat. Sci., I, 196, *Agrotis*.1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 422, *Agrotis*.1877. Grt., Bull. Geol. Surv., III, 118, *Agrotis*.

HABITAT.—Colorado, September; Texas in May; California; Utah in July.

The type is in the British Museum.

C. introferens Grt.*1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 423, *Agrotis*.1876. Harv., Bull. Buff. Soc. Nat. Sci., III, 74, pl. 3, f. 10, *Agrotis*.

HABITAT.—Colorado, August; Texas in May; California; Arizona. The type is in Mr. Graef's collection.

C. soror Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 453, *Agrotis*.

HABITAT.—Montana; Texas, April and November.

The type is in the National Museum.

C. agrestis Grt.1877. Grt., Bull. Geol. Surv., III, 118, var. *auxiliaris*.
mercenaria Grt.1878. Grt., Bull. Geol. Surv., IV, 171, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 101, pr. syn.

flexilis Morr., MSS.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 101, pr. syn.

HABITAT.—Kansas; Colorado, August to October; California; Arizona; Texas, April and May; Nebraska; New Mexico.

The types of Mr. Grote's names are in the British Museum collection, and both refer to the same species. A specimen of *agrestis* marked "type," is also in the Museum of Comparative Zoölogy at Cambridge.

C. inconcinna Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 5, *Agrotis*.

HABITAT.—Arizona; Texas in May; Colorado, September. The type is in the British Museum.

C. immixta Grt.*

1880. Grt., Bull. Geol. Surv., VI, 259, *Agrotis*.

HABITAT.—Texas in May.

The specimens named *immixta* in the National Museum agree with the type in the British Museum; those named *immixta* in the Neumoegen collection are *balinitis*. The species probably belongs to another genus. The preceding species, except the last, are closely related, but I think distinct. The separation of the species in the Revision is in accord with the types, all of which I have now seen. The National Museum series is correctly arranged.

C. balinitis Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 97, pl. 3, f. 4, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 169 = *messoria*.

HABITAT.—Colorado; British Columbia.

I have utterly mistaken this species, as appears by the type in the British Museum. Mr. Grote has always associated it with *messoria* and compared it with that species, so that I naturally sought an ally of *messoria* to which the description could be applied. Specimens fully agreeing with Mr. Grote's type have been labeled *inconcinna* by me in Mr. Neumoegen's collection.

C. terrealis Grt.

1882. Grt., Trans. Kans. Ac. Sci., VIII, 47, *Agrotis*.

HABITAT.—New Mexico.

Types are with Prof. Snow and Mr. Neumoegen.

Genus *RHIZAGROTIS* Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 103.

R. abnormis Smith.*

1890. Smith, Trans. Am. Ent. Soc., XVII, 41, *Agrotis*.

HABITAT.—Sierra Nevada, California.

The types are in the National Museum and in the Henry Edwards collection.

R. proclivis Smith.

1887. Smith, Proc. U. S. Nat. Mus., X, 453, *Agrotis*.

HABITAT.—Arizona.

The types are in the Tepper and Neumoegen collections

R. acclivis Morr.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 93, *Agrotis*.

opaca Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 72, pl. 3, f. 1, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 106, pr. syn.

HABITAT.—New York(?) ; Arizona ; Texas ; Colorado in May.

Dr. Harvey's type is in the British Museum and proves the correctness of my reference. The type of Mr. Morrison's species is in the Tepper collection.

R. albicosta* Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 451, *Agrotis*.

HABITAT.—New Mexico ; Arizona ; Colorado, foothills.

The types are with Mr. Neumoegen and Mr. Graef. Others are in the National Museum.

***R. apicalis* Grt.**

1880. Grt., Bull. Geol. Surv., vi, 153, *Agrotis*.

HABITAT.—Colorado ; New Mexico.

The species does not seem to be represented in the British Museum. The type is with Mr. Neumoegen.

R. lagena* Grt.

1875. Grt., Can. Ent., vii, 26, *Agrotis*.

HABITAT.—Arizona ; Montana ; Utah ; Nevada ; California ; Colorado. The type is in the British Museum.

R. albalis* Grt.

1878. Grt., Bull. Geol. Surv., iv, 175, *Agrotis*.
var. *cloanthoides* Grt.*

1880. Grt., Bull. Geol. Surv., vi, 153, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 108, pr. syn.

HABITAT.—Nevada ; Colorado.

A specimen marked *albalis* type is in the British Museum, and another is in the Bailey collection. The two are not alike. The specimen in the British Museum collection has a very clear, bright, bluish white ground, while that in the Bailey collection has a more sordid appearance and is really a rather shabby specimen of *cloanthoides*, of which Mr. Graef has the type. I have recently received a Colorado specimen exactly like the type of *albalis*, and now consider it a good variety at least. A similar specimen is in the National Museum, labeled by Mr. Grote.

Genus *FELTIA* Wlk.

1856. Wlk., C. B. Mus., Het., ix, 203.

***F. olivia* Morr.**

1876. Morr., Proc. Bost. Soc. N. H., xviii, 238, *Agrotis*.

HABITAT.—Utah.

The type is in the Tepper collection.

F. longidens Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 217, *Feltia*.

HABITAT.—Las Vegas, New Mexico.

A type is with Mr. Neumoegen; another in the National Museum.

F. subgothica Haw.*

1810. Haw., Lep. Britt., 224, *Noctua*.

1829. Steph., Ill. Br. Ent., Haust., II, 126, pl. 22, f. 3, *Agrotis*.

1839. Wood, Index Ent., 36, pl. 9, f. 149, *Agrotis*.

1856. Fitch, 1st and 2d Rept. Ins. N. Y., 314, pl. 3, f. 1, *Agrotis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 99, *Agrotis*.

1874. Lint., Ent. Cont., III, 161, *Agrotis*.

1882. Riley, Papilio, II, 44, *Agrotis*.

1883. Saund., Fruit Insects, 328, f. 329, *Agrotis*.

jaculifera var., Gn.

1852. Gn., Sp. Gen., Noct., I, 262, pl. v, f. 4, *Agrotis*.

1856. Wlk., C. B. Mus., Het., x, 327, *Agrotis*.

1869. Riley, 1st Rept. Ins. Mo., 82, pl. I, f. 11, *Agrotis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 99, pr. syn.

1881. Riley, Index and Suppl. to Mo. Repts., 52, pr. syn.

1882. Riley, Papilio, II, 44, *Agrotis*.

duccus Wlk.

1856. Wlk., C. B. Mus., Het., ix, 203, *Feltia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 77, pr. syn.

1869. Beth., Can. Ent., I, 86, pr. syn.

1889. Butler, Trans. Ent. Soc. Lond., 377, pr. syn.

radiata Harr. Mss.

1891. Smith, List Lep. Bor. Am., 38, pr. syn.

HABITAT.—United States and Canada. Northern States, July to September; Colorado, August.

I have not seen Haworth's work. The figure given by Stephens is a very poor one if it refers to our species; which I am very decidedly inclined to doubt.

F. jaculifera Gn.*

1852. Gn., Sp. Gen., Noct., I, 262, *Agrotis*.

1869. Riley, 1st Rept. Ins. Mo., 82, f. 29 b, *Agrotis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 99=*subgothica*.

1881. Riley, Index and Suppl. to Mo. Repts., 55=*tricolora*.

subgothica † Pack.

1869. Pack., Guide, 306, f. 238, right-hand figure.

1883. Saund., Fruit Insects, 328, f. 329, right-hand figure.

tricolora Lint.

1874. Lint., Ent. Cont., III, 159, *Agrotis*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 5, *Agrotis*.

1882. Riley, Papilio, II, 44, an var. *subgothica*.

1883. Grt., Trans. Am. Phil. Soc., XXI, 156, an sp. dist. †

1889. Butler, Trans. Ent. Soc. Lond., 377, pr. syn.

HABITAT.—United States, east of Rocky Mountains; Colorado; Canada. Northern States, July to September; Texas, October.

F. herilis Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 99, *Agrotis*.
 1874. Lint., Ent. Cont., III, 160, *Agrotis*.
 1882. Riley, Papilio, II, 44=*subgothica* var.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 156, an sp. dist.
jaculifera var. B., Gn.
 1852. Gn., Sp. Gen., Noct., 1, 262, *Agrotis*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 99, pr. syn.

HABITAT.—United States, east of Rocky Mountains; Canada; British Columbia. Northern States, July to September.

The three species last given are represented in the British Museum by good series, and the separation is in accord with my identifications in the National Museum. The types of *ducens* Wlk., *jaculifera* Gn., and *herilis* Grt., are in the English collection, that of *radiata* Harris, is in the collection of the Boston Society of Natural History, and that of *tricosa* is in Dr. Lintner's collection.

F. pectinicornis Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 114, *Feltia*.

HABITAT.—Texas, March and October.

The types are in the U. S. National Museum.

F. evanidalis Grt.

1878. Grt., Bull. Geol. Surv., IV, 172, *Agrotis*.

HABITAT.—California.

The type in the British Museum is a good species, which I had not before seen. The antennæ are shortly pectinated, much as in the preceding, from which, however, it differs by greater size and brighter colors, which are more nearly like *subgothica* than any other.

F. circumdata Grt.

1883. Grt., Ann. & Mag. Nat. Hist., 1883, 53, *Agrotis*.
 1883. Grt., Trans. Kans. Ac. Sci., VIII, 54, *Agrotis*.

HABITAT.—New Mexico.

I do not know where the type is at present.

F. gladiaria Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 162, *Agrotis*.
 1875. Morr., Proc. Acad. Nat. Sci. Phil., 1875, 59, *Agrotis*.
 1880. Grt., Bull. Geol. Surv., VI, 163, *Agrotis*.
morrisoniana Riley.
 1874. Riley, Proc. Bost. Soc. N. H., XVII, 286, *Agrotis*.
 1874. Morr., Proc. Bost. Soc. N. H., XVII, 214, *Agrotis*.

HABITAT.—United States, east of Rocky Mountains; Northern States in September; Texas in October.

Mr. Morrison's type is in the Tepper collection; that of Dr. Riley is in the National Museum. In the British Museum is a specimen labeled *morrisoniana* "type," in Mr. Grote's handwriting. It is correctly determined and came from Dr. Riley.

F. venerabilis Wlk.*

1856. Wlk., C. B. Mus., Het., x, 328, *Agrotis*.

HABITAT.—Canada; United States generally; New York in September; Texas in November; California and Colorado in October.

The type is in the British Museum. Messrs. Grote and Robinson in 1869 and Mr. Butler in 1889 referred *Agrotis incallida* Wlk., as a synonym of the above. The type is a badly rubbed specimen; but it is undoubtedly *Hadena (Luperina) passer* Gn., and not an *Agrotis* at all.

F. gravis Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 155, *Agrotis*.

1875. Grt., Can. Ent., VII, 25, *Agrotis*.

capularis Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 81, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 118, pr. syn.

HABITAT.—California.

Types of Mr. Grote's species are in the British Museum and confirm the above synonymy.

F. vancouverensis Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 134, pl. 4, f. 4, *Agrotis*.

agilis Grt.

1888. Grt., Can. Ent., XX, 128, *Agrotis*.

hortulana Morr.

1875. Morr., Proc. Acad. Nat. Sci. Phil., 1875, 430, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 118, pr. syn.

semiclarata Grt.

1881. Grt., Can. Ent., XIII, 132, *Agrotis*.

1882. Grt., Ill. Essay, 52, pl. I, f. 9, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 378, pr. syn.

HABITAT.—Vancouver; California in June; Colorado; Washington; Utah; Portland, Oregon, May and June.

The types of Mr. Grote's *vancouverensis* and *semiclarata* are in the British Museum, and refer to the same species. Mr. Morrison's type has been examined by me, but I have no memorandum as to its location. I think it is in the Cambridge Museum. The type of *agilis* is with Mr. Fletcher and does not refer to a distinct species. A specimen of *vancouverensis* marked type is also in the Hy. Edwards collection.

F. æneipennis Grt.*

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 81, *Agrotis*.

clodiana Grt.

1881. Grt., Papilio, I, 76, *Agrotis*.

1882. Grt., Ill. Essay, 52, pl. I, f. 10, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 118, = *vancouverensis*.

HABITAT.—With *vancouverensis*. Alameda County, California, in May and June.

Types of both names are in the British Museum. I had referred *clodiana* to *vancouverensis* on the faith of specimens agreeing with Mr.

Grote's figure in the illustrated essay. This is utterly incorrect in color, and not at all a fair representation of the species, which does not differ from *æneipennis*. I would not be very greatly surprised if *tan-couverensis* and *æneipennis* should prove forms of one very variable species.

F. volubilis Harv.*

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 118, *Agrotis*.

stigmosa Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 163, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 121, pr. syn.

HABITAT.—United States and Canada; Northern and Eastern States in June and September; California in June; Portland, Oregon, May and June.

These two species are kept separated in the British Museum, extreme forms only being represented. Neither of the specimens seems to be a type. I do not know where Dr. Harvey's type is. Types of Mr. Morrison's species are in the Tepper and Neumoegen collections.

F. annexa Tr.*

1825. Tr., Schmett. Eur., V, 154, *Agrotis*.

1829. Steph., Ill. Br. Ent. Haust., II, 117, pl. 22, f. 2, *Agrotis*.

1856. Wlk., C. B. Mus., Het., x, 328, *Agrotis*.

1852. Gn., Sp. Gen., Noct., I, 268, *Agrotis*.

1882. French, Can. Ent., XIV, 207, life history.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 378, *Agrotis*.

decernens Wlk.

1856. Wlk., C. B. Mus., Het., x, 333, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 378, *Agrotis*.

HABITAT.—Massachusetts in September; New York, July and August; south and west to Florida; Texas, March and December; California in October; South America.

The type of Walker's species is in the British Museum. Mr. Butler also cites *anteposita* Gn., Noct., I, 278, as a synonym, and perhaps correctly so. I have not seen a typical example, and as the species is described from South America, deemed it of insufficient importance to warrant much search. There is a considerable South and Central American bibliography to this species which it is not necessary to give here.

F. malefida Gn.*

1852. Gn., Sp. Gen., Noct., I, 267, *Agrotis*.

1856. Wlk., C. B. Mus., Het., x, 328, *Agrotis*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 5, *Agrotis*.

HABITAT.—Long Island, New York; New Jersey; south and west to Cuba and California; Florida in March; Texas, November and December.

The type is in the British Museum and proves the species correctly named in American collections.

Genus **POROSAGROTIS** Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 123.

P. vetusta Wlk.*1856. Wlk., C. B. Mus., Het., ix, 78, *Mythimna*.1882. Grt., Ill. Essay, 41, ♀ = *murænula*.*murænula* G. & R.1868. G. & R., Trans. Am. Ent. Soc., i, 352, *Agrotis*.1869. Beth., Can. Ent., i, 86, *Agrotis*.1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 73, pl. 3, f. 3, *Agrotis*.

HABITAT.—Canada; United States, west to Colorado, south to Georgia; New York, July and August; Massachusetts, August and September.

Walker's type is without question this well-known species of Grote & Robinson. The type of the latter authors is in the collection of the American Entomological Society labeled by Mr. Grote, though not marked "type."

P. catenula Grt.*1879. Grt., No. Am. Ent., i, 44, *Agrotis*.

HABITAT.—Colorado, Glenwood Springs, October, Denver in June; Montana; New Mexico; California, in October.

The type is in the British Museum.

P. obesula Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 456, *Agrotis*.

HABITAT.—Montana; Colorado.

The type is in the National Museum.

P. satiens Smith.*1890. Smith, Trans. Am. Ent. Soc., xvii, 45, *Agrotis*.

HABITAT.—Northwest British Columbia; Colorado.

The types are with Mr. Neumœgen, and in the Coll. U. S. National Museum.

P. mimallonis Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 98, *Agrotis*.1878. Grt., Bull. Geol. Surv., iv, 175, *Agrotis*.*rufipennis* Grt.1875. Grt., Can. Ent., vii, 83, *Agrotis*.

1875. Grt., Can. Ent., vii, 226, pr. syn.

HABITAT.—Montana; Colorado; New York, in August; Canada.

The type of *rufipennis* is in the British Museum. *Mimallonis* was described from the Meade collection.

P. fusca Bdv.

1834. Bdv., Ic. Hist. de. Lepid., pl. 48, f. 4, *Agrotis*.
 1864. Mœschl., Wien. Ent. Monatschr., vi, 197, *Agrotis*.
 ♂ *septentrionalis* Mœschl.
 1862. Mœschl., Wien. Ent. Monatschr., iv, 133, pl. 1, f. 3, *Agrotis*.
 1870. Mœschl., Stett. Ent. Zeit., xxxi, 268, pr. syn.
 patula Wlk.
 1856. Wlk., C. B. Mus., Het., x, 329, *Agrotis*.

HABITAT.—Labrador; Rocky Mountains.

Walker's type is in the British Museum, and agrees fully with specimens of *septentrionalis* sent me by Mœschler as typical, years ago. I have never before seen it from the Rocky Mountains, and there is a margin of possibility that larger material will develop points of difference that I do not find now.

P. tripars Wlk.*

1856. Wlk., C. B. Mus., Het., ix, 78, *Mythimna*.
 1882. Grt., Ill. Essay, 41, ♀ an *Agrotis*.
 worthingtoni Grt.
 1880. Grt., No. Am. Ent., i, 91, *Agrotis*.

HABITAT.—New York; Indiana.

The types of both names are in the British Museum. The species is a familiar one to me; but I had, following Mr. Morrison, doubtfully identified it with *Eucrotopnemis fimbriaris* Gn., than which it is narrower winged with almost the same maculation. Its association with the species of this genus is probably correct; but I have had no opportunity to examine a male critically. I have a specimen compared with the type. The National Museum specimens are under the name *Eucrotopnemis fimbriaris*, labeled by Mr. Morrison.

P. rileyana Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 166, *Agrotis*.
 1875. Morr., Proc. Acad. Nat. Sci. Phil., 58, *Agrotis*.

HABITAT.—New York; Illinois; Missouri; Kansas; New Mexico; Colorado; Texas.

A specimen marked "type" is in the British Museum; others are in the National Museum and in the Tepper and other collections, all referring to the same species. Mr. Morrison was very liberal in marking types of this species.

P. texana Grt.

1863. Grt., Proc. Ent. Soc. Phil., ii, 273, pl. vi, f. 2, *Agrotis texanus*.
 1881. Grt., Papilio, i, 127, 153, ♀= *segetum*.
 1883. Grt., Papilio, iii, 76, an sp. dist.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 154, *Carneades*.

HABITAT.—Texas.

The types, ♂ and ♀, are in the collection of the American Entomological Society. In the British Museum is a specimen labeled *texana* by

Mr. Grote, which is not the same species. The insect is from Tucson, Ariz., and is from Mr. Neumægen's collection. In that collection are other specimens also labeled *texana* and from them I drew the character for the species, in my revision. I had not been able at that time to find the type in the Philadelphia collection; but a recent systematic search discovered the specimens under a misleading label. Indeed, but for the fact that one of the specimens was obviously the original of the figure above cited, they could not have been identified with certainty at all. As it is, the type proves a *Porosagrotis* instead of a *Carneades*, and the insect I described in my revision lacks a name. The ♂ antennæ are pectinated, secondaries white in the male, only a little soiled in the female. The claviform is obvious. It is between *rileyi* and *orthogonia*, differing obviously from either. The types have no locality labels, and I have no information as to who collected them. It is possible that it may prove more nearly related to my *obesula* than I now believe, when abundant material is at hand.

P. orthogonia Morr.*

1876. Morr., Proc. Bost. Soc. N. H., XVIII, 239, *Agrotis*.

HABITAT.—Colorado; New Mexico; Nebraska; Arizona; Utah.
I have not seen the type.

P. dædalus Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 217, *Porosagrotis*.

HABITAT.—Colorado.

Types are in the National Museum.

P. dollii Grt.

1882. Grt., Can. Ent., XIV, 216, *Agrotis*.

HABITAT.—Arizona.

The types are with Mr. Neumoegen.

P. milleri Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 78, pl. 4, f. 4, *Agrotis*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

P. pluralis Grt.*

1878. Grt., Bull. Geol. Surv., IV, 174, *Agrotis*.

1890. Grt., Bull. Geol. Surv., VI, 144, *Agrotis*.

1882. Grt., Ill. Essay, 55, pl. 2, f. 16, *Agrotis*.

HABITAT.—Nevada; Colorado.

A specimen marked "type" is in the British Museum; another, marked in the same way, is in the Bailey collection.

Genus **CARNEADES** Grt.

1883. Grt., Can. Ent., xv, 4.

C. wilsonii Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 135, pl. 4, f. 3, *Agrotis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 62, *Agrotis*.*specialis* Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 62, *Agrotis*.1882. Grt., Ill. Essay, 54, pl. 2, f. 14, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 133, pr. syn.

æqualis Harv.1876. Harv., Can. Ent., viii, 36, *Agrotis*.

HABITAT.—California, August and September; Glenwood Springs, Colorado, September.

Types of each of the above names are in the British Museum. *Specialis* is simply a color variety of *wilsonii*, between which every intermediate form exists. The type of *æqualis* is a rubbed and somewhat imperfect specimen, with the markings consequently less defined. The species is an excessively variable one. A "type" of *wilsonii* is also to be found in the Museum of Comparative Zoölogy, Cambridge.

C. lacunosa Grt.*1878. Grt., Bull. Geol. Surv., iv, 172, *Agrotis*.**HABITAT.**—California.

Mr. Grote says the type is in the collection of the Buffalo Society of Natural Science. A specimen labeled by Mr. Grote is in the British Museum.

C. recula Harv.*1876. Harv., Can. Ent., viii, 37, *Agrotis*.**HABITAT.**—Oregon; Colorado.

A type specimen is in the British Museum; others are in the Edwards collection.

C. cicatricosa G. and R.*1865. G. and R., Proc. Ent. Soc. Phil., iv, 492, pl. 3, f. 4, *Agrotis*.**HABITAT.**—Colorado.

A specimen named by Mr. Grote is in the British Museum; the type is in the collection of the American Entomological Society.

C. neomexicana Smith.*1890. Smith, Bull. U. S. Nat. Mus., No. 38, 218, *Carneades*.**HABITAT.**—New Mexico.

Types are in the National Museum and the collections of Neumoegen and Hulst, the latter now at Rutgers College.

C. quadridentata G. and R.*

1865. G. and R., Proc. Ent. Soc. Phil., iv, 491, pl. 3, ff. 2 and 3, *Agrotis*.

HABITAT.—Colorado; Oregon.

A specimen named by Mr. Grote is in the British Museum; the type is in the collection of the American Entomological Society.

C. nivellinea Grt.*

1882. Grt., Can. Ent., xiv, 216, *Agrotis*.

HABITAT.—Arizona; New Mexico; Colorado; Nebraska; Texas in October.

Types are in the National Museum and in Mr. Neumoegen's collection.

C. insertans Smith.

1890. Smith, Trans. Am. Ent. Soc., xvii, 45, *Agrotis*.

HABITAT.—Spencer's Bridge, British Columbia.

The type is in Mr. Neumoegen's collection.

C. brevipennis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 455, *Agrotis*.

HABITAT.—California; Nevada; Colorado in September.

Types are in the National Museum collection and with Mr. Neumoegen.

C. oblongostigma Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 454, *Agrotis*.

HABITAT.—Montana; Black Hills; Colorado, Glenwood Springs, August.

Type specimens are in the National Museum, and in the collections of Graef, Neumoegen, and Hulst.

C. plagigera Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 163, *Agrotis*.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 57, *Agrotis*.

HABITAT.—Colorado, Glenwood Springs, August; Montana; Nevada; Kansas; Washington; Illinois; New York.

Specimens, not types, are in the British Museum; the type is in the Tepper collection.

C. olivalis Grt.*

1879. Grt., No. Am. Ent., i, 43, *Agrotis*.

HABITAT.—Colorado; Utah.

The type is in the British Museum, and is like the specimens so named in the National collection.

C. ridingsiana Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 305, *Agrotis*.

HABITAT.—Colorado, in May; Arizona; New Mexico.

The type is in the British Museum.

C. flavidens Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 455, *Agrotis*.

HABITAT.—Colorado, July; Arizona; New Mexico in August.

Types are in the National Museum, and in the collections of Graef and Neumoegen.

C. flavicollis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 456, *Agrotis*.

HABITAT.—Montana; Colorado; Arizona.

The type is in the Tepper collection.

C. bicollaris Grt.*

1878. Grt., Bull. Geol. Surv., IV, 173, 174, *Agrotis*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 155, *Agrotis*.

HABITAT.—California; Nevada; Arizona.

The type is in the Edwards collection; I found no specimens in the British Museum.

C. brocha Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 56, *Agrotis*.

brocha Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 163, *Agrotis*.

HABITAT.—Colorado, August to October; Nevada; Kansas; Nebraska.

This species is placed under *Agrotis furcifera* Wlk., in the British Museum collections, in my opinion erroneously. Mr. Walker has also described a specimen as *Agrotis transversa*, which is almost certainly the same as Morrison's species. There are, however, several forms from Central or South America that come very close, and as careful and critical study would be required to decide specific limitations, for which I had not the time, I prefer leaving the name as it is, simply calling attention to the probabilities, and to the necessity for further study.

C. sponsa Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 457, *Agrotis*.

HABITAT.—Washington.

The type is in the National Museum.

C. cogitans Smith.*

1890. Smith, Trans. Am. Ent. Soc., XVII, 46, *Agrotis*.

HABITAT.—California; Colorado.

Types are in the National collection and with Mr. Neumoegen.

C. hollemanii Grt.*

1874. Grt., Can. Ent., vi, 156, *Agrotis*.

HABITAT.—California; Arizona; Colorado, Glenwood Springs, August and September.

The specimen in the British Museum agrees with my identifications of the species, but is not the type. I have not seen the latter.

C. atristrigata Smith.

1890. Smith, Ent. Amer., vi, 76, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 150, *Carneades*.

HABITAT.—Northwest British Columbia.

The type is with Mr. Neumoegen.

C. biclavus Grt.*

1879. Grt., Bull. Geol. Surv., v, 206, *Agrotis*.

1882. Grt., Ill. Essay, 53, pl. I, f. 12, *Agrotis*.

HABITAT.—Arizona.

The type is in the British Museum. It is a very distinct, brightly marked form and is correctly located in my revision.

C. perpolita Morr.*

1876. Morr., Proc. Bost. Soc. N. H., xviii, 237, *Agrotis*.

1878. Lint., Ent. Cont., iv, 123, *Agrotis*.

HABITAT.—New York in August, and northward; Colorado, Glenwood Springs, August.

The type is in the Tepper collection.

C. fumalis Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 98, *Agrotis*.

1878. Grt., Bull. Geol. Surv., iv, 174, *Agrotis*.

permunda Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 163, *Agrotis*.

1880. Grt., Bull. Surv., vi, 151, pr. syn.

HABITAT.—Northern, Eastern, and Middle States; District of Columbia; Canada; Massachusetts in August.

A specimen labeled *permunda* is in the National Museum, from the Meske collection, and the British Museum specimen labeled *fumalis* by Mr. Grote, is the same. It is not the type.

C. perfusca Grt.

1883. Grt., Papilio, iii, 77, *Agrotis*.

HABITAT.—California; Colorado; Arizona.

The type is with Mr. Graef.

C. punctigera Wlk.*

1865. Wlk., C. B. Mus., Het., xxxii, 661, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 273, *Mamestra*.
pastoralis Grt.

1875. Grt., Can. Ent., vii, 68, *Agrotis*.

HABITAT.—Vancouver; Washington; Nevada; Colorado; Arizona; New Mexico; Northwest British Columbia.

The types of both names are in the British Museum, and refer to the same species. This species is variable; but both *punctigera* and *pastoralis* were applied to the same form of it.

C. finis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 457, *Agrotis*.

HABITAT.—Black Hills; Montana.

The type is in the National Museum.

C. velleripennis Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., App. 25, *Agrotis*.

HABITAT.—Canada; Eastern and Middle States, west to the Rocky Mountains; Colorado; Massachusetts and Illinois, in August; New York, in September.

C. atomaris Smith.*

1890. Smith, Trans. Am. Ent. Soc., xvii, 47, *Agrotis*.

HABITAT.—California, in September; Colorado, Glenwood Springs, September.

Types are in the National Museum and in the Neumøgen collection.

C. gagates Grt.*

1875. Grt., Can. Ent., vii, 68, *Agrotis*.

1880. Grt., Bull. U. S. Geol. Surv., vi, 162, *Agrotis*.

HABITAT.—Colorado, Glenwood Springs, August to October; California, in September.

The type is in the British Museum.

C. citricolor Grt.*

1880. Grt., Can. Ent., xii, 154, *Agrotis*.

1880. Grt., Bull. Geol. Surv., vi, 160, *Agrotis*.

1883. Grt., Can. Ent., xv, 26, *Carneades*.

HABITAT.—Colorado; Utah; Arizona; New Mexico.

The type is in the British Museum.

C. misturata Morr., MSS.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 156, *Carneades*.

HABITAT.—Colorado, Glenwood Springs, September.

The types are in the Tepper and Neumøgen collections.

C. moerens Grt.

1883. Grt., Can. Ent., xv, 4, *Carneades*.

1883. Grt., Papilio, III, 30, *Carneades*.

HABITAT.—Arizona.

The type is in Mr. Neumøgen's collection.

C. dollis Grt.

1880. Grt., No. Am. Ent., I, 91, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 381, = *Chera birivia*.

HABITAT.—Colorado.

The type is in the Graef collection. A specimen in the British Museum is somewhat more maculate; but seems to be the same. Mr. Butler refers it to *Chera birivia*, Hbn., and I can not myself find any obvious differences between them. *Birivia* is an alpine species, and I am not ready to believe, without the most critical comparison, that the two are identical, though superficially they seem alike. I have therefore retained Mr. Grote's name for the present. If *Chera* has as type this species, it will have to replace *Carneades*. Mr. Grote's specimen has no locality.

C. scandens Riley.*

1869. Riley, 1st Rept. Ins. Mo., 76, pl. I, f. 5, 7, *Agrotis*.

1874. Riley, 6th Rept. Ins. Mo., 6, *Agrotis*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 306, = *murænula*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 73, pl. 3, f. 4, an sp. dist.

1881. Riley, Ind. et Suppl. to Mo. Repts., 75, *Agrotis*.

1881. Grt., Papilio, I, 127, = *messoria*?

1882. Riley, Papilio, II, 43, an sp. dist.

1883. Saund., Fruit Insects, 107, f. 105, *Agrotis*.

HABITAT.—East of Rocky Mountains; Colorado; Northern States in June.

The type is in the National Museum. A correctly named specimen from the Grote collection is in the British Museum, and I can not understand how Mr. Grote ever saw any resemblance to either *murænula* or *messoria*.

C. detesta Smith.

choris † Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 158, *Carneades*.

HABITAT.—Colorado.

I have mistaken Dr. Harvey's species, as appears by the type in the British Museum, and I propose the name *detesta* for the species I have described in my revision under the term *choris*.

C. remota Smith.

1890. Smith, Trans. Am. Ent. Soc., XVII, 48, *Agrotis*.

HABITAT.—Sierra Nevada, California; Colorado.

The type is in the Edwards collection.

C. detera Wlk.*

1856. Wlk., C. B. Mus., Het., ix, 212, † *Charæas*.

pitychrous Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 82, *Agrotis*.

1889. Beutenmüller, Ent. Amer., v, 38, larva.

personata Morr.

1876. Morr., Proc. Bost. Soc. N. H., xviii, 238.

1880. Grt., Can. Ent., xii, 187, pr. syn.

HABITAT.—Nova Scotia; Canada; Northern, Eastern, Middle, and Central States; Colorado, Glenwood Springs, September; Northern States, July, August, and September.

Walker's type in the British Museum is like an average *pitychrous*, such as is also in the collection from the Grote material. The type of *personata* is in the Tepper collection, and is a small fully marked specimen, such as is occasionally found throughout the range of the species. The type of *pitychrous* is with Dr. Lintner.

C. infracta Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 115, *Agrotis*.

HABITAT.—Colorado; Texas.

The type is in the Tepper collection.

C. luteola Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 457, *Agrotis*.

HABITAT.—Arizona.

The type is in Mr. Neumoegen's collection.

C. serricornis Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 458, *Agrotis*.

HABITAT.—Southern California.

The type is in the Tepper collection.

C. tetrica Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 458, *Agrotis*.

HABITAT.—Texas; Nevada.

Types are in the Bailey collection.

C. bostoniensis Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 203, *Agrotis*.

1876. Harv., Bull. Buff. Soc. Nat. Sci., iii, 74, pl. 3, f. 7, *Agrotis*.

HABITAT.—Middle, Eastern, and Northern States; Canada; Massachusetts in September; New York in October.

The type is in the British Museum.

C. cænis Grt.*

1879. Grt., No. Am. Ent., i, 44, *Agrotis*.

muscosa Grt.

1883. Grt., Can. Ent., xv, 26, *Agrotis*.

1887. Smith, Proc. U. S. Nat. Mus., x, 460, pr. syn.

HABITAT.—Colorado, Glenwood Springs, August to October; New Mexico.

The type of *cænis* is in the British, that of *muscosa* in the U. S. National Museum. The two are of the same species. A type of *cænis* is also in the Neumoegen collection.

C. medialis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 459, *Agrotis*.

HABITAT.—Texas, October and November; Colorado.

The types are in the National Museum.

C. feniseeca Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 74, pl. 3, f. 6, *Agrotis*.

1875. Grt., List Noctuidæ, 25, *Agrotis*.

HABITAT.—California.

The type is in the British Museum.

C. extranea Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 459, *Agrotis*.

HABITAT.—Montana.

The type is in the Tepper collection.

C. trifasciata Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 460, *Agrotis*.

HABITAT.—Mount Hood, Oregon.

The types are in the Tepper and Graef collections.

C. bifasciata Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 460, *Agrotis*.

HABITAT.—Arizona.

The type is in the National Museum.

C. comosa Morr.

1876. Morr., Proc. Bost. Soc. N. H., XVIII, 238, *Agrotis*.

HABITAT.—Colorado.

The type is in the Tepper collection. A specimen labeled *comosa* by Mr. Grote, is in the British Museum, and is not like the type. It is nearer to my *incallida*, from which it differs obviously, and is probably undescribed.

C. sculptilis Harv.*

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 271, *Agrotis*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 73, pl. 3, f. 2, *Agrotis*.

1882. Grt., New List Lepid., *Ammaconia*.

1887. Grt., Can. Ent., XLIX, 44, *Rich's*.

zyliniformis Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 221, *Carneades*.

HABITAT.—Texas, in October; New Mexico.

Dr. Harvey's type is in the British Museum, and is like the type of *xyliniformis* in the National Museum. Dr. Harvey's figure is poor and does not suggest this species at all. Mr. Grote's reference of the species to *Ammaconia* prevented all chance of my recognizing it. It has nothing at all in common with the other species referred to that genus.

C. messoria Harr.*

- 1841. Harr., Rept. Ins. Mass., *Agrotis*.
- 1862. Harr., Inj. Ins., Flint ed., 444, *Agrotis*.
- 1885. Riley, Ent. Amer., I, 176, *Agrotis*.
epissa Gn.
- 1852. Gn., Sp. Gen., Noct., I, 261, *Agrotis*.
- 1856. Wlk., C. B. Mus., Het., x, 327, *Agrotis*.
- 1877. Grt., Can. Ent., ix, 28, pr. syn.
- 1880. Grt., Bull. Geol. Surv., vi, 568, *Agrotis*.
- 1889. Butler, Trans. Ent. Soc. Lond., 379, pr. syn.
lycarum † Grt.
- 1874. Grt., Can. Ent., vi, 155, *Agrotis*.
cochrani Riley.
- 1868. Riley, Prairie Farmer, July, 1868, *Agrotis*.
- 1869. Riley, 1st. Rept. Ins. Mo., 75, *Agrotis*.
- 1874. Grt., Can. Ent., vi, 214, pr. syn.
- 1881. Riley, Index and Suppl. to Mo. Repts., 76, pr. syn.
- 1881. Grt., Papilio, I, 126, pr. syn.
- 1882. Riley, Papilio, II, 41, *Agrotis*.
- 1883. Saund., Fruit Insects, 107, f. 104, *Agrotis*.
repentis G. & R.
- 1868. G. & R., Trans. Am. Ent. Soc., I, 350, pl. 7, f. 58, *Agrotis*.
- 1873. Grt., Bull. Buff. Soc., Nat. Sci., I, 96, *Agrotis*.
- 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53 = *cochrani*.
- 1881. Grt., Papilio, I, 126 = *messoria*.
confracta Morr. Mss.
- 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 169, pr. syn.
displiciens Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 660, *Mamestra*.
- 1891. Smith, Can. Ent., xxiii, 119, pr. syn.
reticens Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 692, *Agrotis*.
- 1891. Smith, Can. Ent., xxiii, 119, pr. syn.
ordinata Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 691, *Agrotis*.
- 1891. Smith, Can. Ent., xxiii, 119, pr. syn.
inextricata Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 658, *Mamestra*.
- 1891. Smith, Can. Ent., xxiii, 120, pr. syn.
indirecta Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 659, *Mamestra*.
- 1891. Smith, Can. Ent., xxiii, 120, pr. syn.
septentrionalis Wlk.
- 1865. Wlk., C. B. Mus., Het., xxxii, 660, *Mamestra*.
- 1891. Smith, Proc. U. S. Nat. Mus., xiv, 272, *Mamestra*.
inducta Wlk.
- 1857. Wlk., C. B. Mus., Het., x, 236, *Mamestra*.

HABITAT.—United States and Canada. Canada, June, July, and September; New York, Illinois, August and September; California, in September; Colorado, Glenwood Springs, August, September.

Harris's type is in the Boston Society of Natural History, where I have seen it. *Spissa* Gn., as determined by Walker, is the same species; but the type is not in the British Museum. Walker found this species a veritable silver mine, seven hard shillings being its value to him, and as many of his types are in the Museum. Dr. Riley's type is in the National Museum. Mr. Morrison's is in the Tepper collection.

The type of *repentis* is to be found in the collection of the American Entomological Society. *Inducta* was described from Venezuela, giving this species a very wide range.

C. pleuritica Grt.*

1875. Grt., Check List, 1875, 47, *Agrotis*.

HABITAT.—Canada; Maine; New Hampshire; northern New York. The type is in the British Museum.

C. drewseni Stgr.

1857. Stgr., Stett. Ent. Zeit., 1857, 302, *Agrotis*.

HABITAT.—Greenland.

The types, male and female, are in the Berlin Museum, and belong nearest to *pleuritica* in appearance. The wings are narrow, elongate in the specimen, and of a rather pale gray. I have seen something very like this from Colorado; but it is probably a different species.

C. choris Harv.

1876. Harv., Can. Ent., VIII, 37, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 158, *Carneades*.

HABITAT.—Nevada.

The type is in the British Museum. I had misidentified this species in my revision, and placed it next to *scandens*. It looks like a *messoria* with the lines almost obliterate and with white secondaries. The orbicular is oval, black-ringed; the reniform incomplete. The median shade line is obscure.

C. perturbata Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 222, *Carneades*.

HABITAT.—Colorado.

The type is in the National Museum.

C. rubefactalis Grt.*

1890. Grt., Bull. Geol. Surv., VI, 154, *Agrotis*.

HABITAT.—Washington; Colorado.

The type is in the British Museum.

C. fauna Morr.

1876. Morr., Proc. Bost. Soc. N. H., XVIII, 237, *Agrotis*.

HABITAT.—California.

The type, a miserable specimen, is in the Tepper collection.

C. brunneigera Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 80, *Agrotis*.

1880. Grt., Bull. Geol. Surv., VI, 260, *Agrotis*.

HABITAT.—California in September; Washington; Vancouver; Colorado; Louisiana.

The type is in the Edwards collection. Another, also marked "type," is in the British Museum.

C. conjuncta Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 221, *Carnecades*.

HABITAT.—Las Vegas, New Mexico; Colorado.

The type is in Mr. Neumægen's collection.

C. incallida Smith.

1890. Smith, Trans. Am. Ent. Soc., XVII, 50, *Agrotis*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

C. lutulenta Smith.*

1890. Smith, Trans. Am. Ent. Soc., XVII, 50, *Agrotis*.

HABITAT.—Sierra Nevada, California; Placer County, in September; Colorado, Glenwood Springs, August to October.

Types are in the National Museum; others in collection Edwards and Rutgers College.

C. annulipes Smith.*

1890. Smith, Trans. Am. Ent. Soc., XVII, 48, *Agrotis*.

HABITAT.—Oregon.

The type is in the National Museum.

C. pedalis Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 220, *Carnecades*.

HABITAT.—Colorado.

The type is in the National Museum.

C. lineifrons Smith.*

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 219, *Carnecades*.

HABITAT.—Colorado.

The type is in the National Museum.

C. teleboa Smith.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 219, *Carneades*.

HABITAT.—Las Vegas, New Mexico; Colorado.

The type is with Mr. Neumögen.

C. murdocki Smith.*

1890. Smith, Trans. Am. Ent. Soc., xvii, 49, *Agrotis*.

HABITAT.—Utah, Fort Thornburgh; Northwest British Columbia; Oregon; Glenwood Springs, Colorado, in September.

A type is in the National Museum; another in Mr. Neumögen's collection.

C. quinquelinea Smith.

1890. Smith, Trans. Am. Ent. Soc., xvii, 49, *Agrotis*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

C. friabilis Grt.*

1875. Grt., Can. Ent., vii, 187, pl. 1, f. 5, *Agrotis*.

HABITAT.—New York; Maine; Canada in August; Colorado; California in June and August.

The type is in the British Museum. It is rather rubbed, and the resemblance to *bostoniensis*, mentioned by Mr. Grote, is more evident than I supposed possible from my material.

C. fuscigera Grt.*

1874. Grt., Can. Ent., vi, 155, *Agrotis*.

HABITAT.—California; Colorado, Glenwood Springs in September.

The type is in the British Museum.

C. orbicularis Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 460, *Agrotis*.

HABITAT.—Nevada.

The type is in the Tepper collection.

C. micronyx Grt.

1878. Grt., Bull. Geol. Surv., iv, 171, *Agrotis*.

HABITAT.—California.

The type is in the British Museum.

C. intrita Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 164, *Agrotis*.

1875. Grt., Can. Ent., vii, 68, *Agrotis*.

HABITAT.—Vancouver; California; Arizona.

Specimens named by Mr. Grote are in the British Museum. I have no notes as to the location of the type.

C. mollis Wlk.1856. Wlk., C. B. Mus., Het. x, 331, *Agrotis*.*fernaldi* Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 429, *Agrotis*.1882. Grt., Ill. Essay, 53, pl. I, f. 11, *Agrotis*.

HABITAT.—Maine; St. Martins Falls, Albany River, Hudson Bay Territory; Colorado.

Walker's type is rather a small specimen; but is exactly like a specimen from the Grote collection, marked "type." Both are in the British Museum. I had previously seen the species in Mrs. Fernald's collection. I sincerely regret being compelled to make this reference. Mr. Neumægen also has a "type" of Mr. Morrison's species. I was much interested to find a specimen of this species in the 1892 captures sent me by Mr. Bruce from Colorado.

C. opipara Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 165, *Agrotis*.1875. Morr., Psyche, I, 42, *Agrotis*.1875. Grt., Psyche, I, 77, 99 = *islandica*.1875. Morr., Psyche, I, 85, an sp. dist., *islandica*.1876. Grt., Stett. Ent. Zeit., xxxvi, 135 = *islandica*.1885. Smith, Ent. Amer., I, 15, an sp. dist., *islandica*.1885. Smith, Stett. Ent. Zeit., xlvi, 223, *Agrotis*.*labradoriensis* Stgr.1881. Stgr., Stett. Ent. Zeit., xlii, 419, *Agrotis*.1883. Moeschl., Stett. Ent. Zeit., xlii, 117, *Agrotis*.

1885. Smith, Stett. Ent. Zeit., xlvi, 223, pr. syn.

islandica † Auct.1876. Grt., Stett. Ent. Zeit., xxxvi, 135, *Agrotis*.1878. Pack., Bull. Geol. Surv., iv, 555, pl. f. 10, *Agrotis*.1883. Moeschl., Stett. Ent. Zeit., xlii, 117, *Agrotis*.

1885. Smith, Stett. Ent. Zeit., xlvi, 223, pr. syn.

HABITAT.—Mount Washington, New Hampshire; Labrador.

The type, or a specimen so marked, is in the British Museum and agrees fully with specimens in American collections. In Staudinger's collection, at Dresden, I saw his types of *labradoriensis*, and they are undoubtedly the same as *opipara*. They are as unquestionably distinct from the true *islandica*, the type of which I had the chance of comparing with it.

C. tristicula Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 429, *Agrotis*.

HABITAT.—Orono, Maine.

I have seen only one specimen, typical, though not the type from Mrs. Fernald's collection. The type is with Mr. Neumægen.

C. munis Grt.*1879. Grt., No. Am. Ent., I, 38, *Agrotis*.*sublatis* Grt.1880. Grt., No. Am. Ent., I, 91, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 184, pr. syn.

HABITAT.—Colorado, Glenwood Springs in October; Nevada; New Mexico.

The type of *munis* is in the British Museum; that of *sublatis* is in the Hulst collection. They undoubtedly refer to the same species.

C. dissona Moeschl.

1860. Moeschl., Wien. Ent. Monatschr., iv, 365, pl. 9, f. 4, *Agrotis*.

1885. Smith, Ent. Amer., i, 14, *Agrotis*.

1885. Smith, Stett. Ent. Zeit., XLVI, 223, *Agrotis*.

rara† Pack.

1886. Pack., Proc. Bost. Soc. N. H., xi, 38, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 184, pr. syn.

HABITAT.—Labrador.

Mr. Moeschler was good enough to send me type specimens for study. In the Staudinger collection is quite a good series showing no small amount of variation. The tendency is all in the direction of *opipara*, from which it really differs only in lacking the black shades and lines.

C. vetusta Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 662, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 274, *Mamestra*.
tetra Wlk.

1865. Wlk., C. B. Mus., Het., xxxiii, 768, *Lepipolys*.
euroides Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 202, *Agrotis*.
perpura Morr.

1874. Morr., Pr. Bost. Soc. N. H., xvii, 164, *Agrotis*.

1890. Grt., Bull. Geol. Surv., vi, 151 = *euroides*.

HABITAT.—California; Washington; Vancouver.

Types of the Walker and Grote species are in the British Museum. All the names refer to one form.

C. alticola Smith.*

1890. Smith, Trans. Am. Ent. Soc., xvii, 51, *Agrotis*.

HABITAT.—Sierra Nevada, California; Colorado.

Types are in the National Museum and in the Edwards collection.

infausta Wlk.*

1865. Wlk., C. B. Mus., Het., xxxiii, 729, *Hadena*.

rufula Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 461, *Agrotis*.

HABITAT.—Vancouver; New Mexico, 7,000 feet, in July; Colorado, Hall Valley in August.

The type of Walker's species is in the British Museum; of my own, specimens are in the National Museum and with Prof. Snow. There is, unfortunately, no doubt that the names refer to the one species.

C. basiflava Smith.*

1890. Smith, Trans. Am. Ent. Soc., xvii, 52, *Agrotis*.

HABITAT.—Northwest British Columbia; South Park, Colorado.

Types are in the National Museum and in the Neumögen collection.

C. satis Harv.

1876. Harv., Can. Ent., VIII, 36, *Agrotis*.

HABITAT.—California; Nevada; Montana.

I have not found the type of this species. It was described out of the Edwards collection, and the specimens there named are probably as typical as can be asked.

C. rena Smith.*

1890. Smith, Trans. Am. Ent. Soc., XVII, 53, *Agrotis*.

HABITAT.—Sierra Nevada, Placer County, in September, California.

Types are in the National Museum, and in the Edwards collection.

C. insulsa Wlk.*

1856. Wlk., C. B. Mus., Het., IX, 234, *Mamestra*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., II, 15, *Hadena*.

1883. Grt., Ill. Essay, 43, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 208, *Agrotis*.
insignata Wlk.

1856. Wlk., C. B. Mus., Het., X, 330, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 379, *Agrotis*.
expulsa Wlk.

1865. Wlk., C. B. Mus., Het., XXXII, 661, *Mamestra*.
declarata Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 663, *Mamestra*.

1882. Grt., Ill. Essay, 43, *Agrotis*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 156, *Agrotis*.

1885. Saund., Can. Ent.; XVII, 32, *Agrotis*.

1888. Butler, Trans. Ent. Soc. Lond., 1889, 379 = *insignata*.
tritici † Gn.

1852. Gn., Sp. Gen., Noct., I, 228, *Agrotis*.

1856. Wlk., C. B. Mus., Het., X, 321, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 379 = *insignata*.
decolor Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 162, *Agrotis*.

1875. Morr., Can. Ent., VII, 214, *Agrotis*.

1877. Morr., Bull. Buff. Soc. Nat. Sci., III, 212, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 190 = *insignata*.
campestris Grt.

1875. Grt., Can. Ent., VII, 118, pl. I, f. 6, *Agrotis*.

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 423, *Agrotis*.

1875. Morr., Can. Ent., VII, 214 = *decolor*.

1875. Grt., Can. Ent., VII, 227 = *decolor*.

1877. Grt., Bull. Geol. Surv., III, 118, *Agrotis*.

1878. Grt., Bull. Geol. Surv., IV, 175, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 379 = *insignata*.
var. *verticalis* Grt.*

1880. Grt., Bull. Bkln. Ent. Soc., III, 29, *Agrotis*.

1885. Smith, Can. Ent., XVII, 6 = *declarata*.

HABITAT.—Nova Scotia; Canada; northern United States from Atlantic to Pacific; Massachusetts in June; Canada in July; New York in August; California in September.

The types of the Walker and Grote names are all in the British Museum and they refer to one species only. *Inaulsa* is a somewhat evenly colored form, with the cell but slightly contrasting; otherwise there is no difference. *Decolor* Morr., of which I have also seen the type, is the form in which there is considerable contrast between the light and dark shades, while in type *campestris* the color is even and the median lines become more marked.

C. tessellata Harr.*

1845. Harr., Rept. Ins. Mass., *Agrotis*.
 1860. Harr., Inj. Ins., Flint. ed., 445, *Agrotis*.
 1877. Grt., Bull. Geol. Surv., III, 118, *Agrotis*.
 1883. Saund., Fruit Insects, 328, f. 340, *Agrotis*.
 maizi Fitch.
 1856. Fitch, 2d Rept. Ins. N. Y., 313, *Agrotis*.
 1865. Fitch, 9th Rept. Ins. N. Y., 237-249, pl. 4, f. 2 and 3, *Agrotis*.
 1874. Grt., Can. Ent. VI, 118, pr. syn.
 1878. Lint., Ent. Cont., IV, 122, pr. syn.
 nigricans? Riley.
 1869. Riley, 1st Rept. Ins. Mo., 87, *Agrotis*.
 atropurpurea Grt.
 1877. Grt., Bull. Geol. Surv., III, 118, *Agrotis*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 192, pr. syn.

HABITAT.—United States; Canada in June and July; New York; Illinois, August and September; Colorado, Glenwood Springs, August to October.

Harris's type is in the Boston Society of Natural History. The type of Mr. Grote's species is in the British Museum, and is merely a small *tessellata*. It is a matter of the greatest surprise that Walker has not redescribed the species. I think he considered it a form of *tritici*.

C. albipennis Grt.*

1877. Grt., Bull. Buff. Soc. Nat. Sci., III, 118, *Agrotis*.
 1880. Grt., Bull. Geol. Surv., VI, 175, *Agrotis*.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 156, *Agrotis*.
 ♀ *nigripennis* Grt.
 1880. Grt., Bull. Geol. Surv., VI, 159, *Agrotis*.
 1882. Grt., New List, 25, pr. syn.

HABITAT.—Northern United States east of the Rocky Mountains; Colorado, Glenwood Springs in August; New Mexico; Canada; Massachusetts in September; New York in August.

The type is in the British Museum.

C. spectanda Smith.

1890. Smith, Trans. Am. Ent. Soc., XVII, 54, *Agrotis*.

HABITAT.—California.

The type is with Mr. Neumægen.

C. perexcellens Grt."

1880. Grt., Bull. Geol. Surv., vi, 156, *Agrotis*.

excellens || Grt.

1875. Grt., Trans. Am. Ent. Soc., v, 115, *Agrotis*.

1880. Grt., Bull. Geol. Surv., vi, 156, n. b. l.

infelix Smith.

1890. Smith, Trans. Am. Ent. Soc., xvii, 57, *Agrotis*.

HABITAT.—Colorado, Glenwood Springs in September; California, September and October; Oregon; Vancouver.

Mr. Grote's type in the British Museum is exactly like my types in Mr. Neumögen's collection and in the National Museum. I am not at all satisfied that there is not a good species such as I have placed in the *4-dentata* series in the "Revision;" but Mr. Grote's type is unquestionably like my *infelix* and my name sinks. The species is an excessively variable one, and its exact limits are scarcely defined as yet.

C. islandica Stgr.

1857. Stgr., Stett. Ent. Zeit., 1857, 232, *Agrotis*.

HABITAT.—Iceland.

A good series of this species is in Staudinger's collection, and both sexes are also represented in the museum at Berlin. Like the surrounding species, this is extremely variable, resembling both *obeliscoides* and *tessellata*. The maculation is perhaps more like the latter; but the color contrasts are sharper, and the species as a whole is brighter. I can not understand why Staudinger considered his *labradoriensis* a variety. He has now associated it in the collection with *dissona*, which it resembles much more nearly. In the Grote collection in the British Museum is a specimen of *opipara* labeled *islandica* by Mr. Grote, and also a California species labeled in the same way. The latter is really much more nearly correct.

C. colata Grt.

1881. Grt., Can. Ent., xiii, 131, *Agrotis*.

HABITAT.—Mount Hood, Oregon; Sierra Nevada, California.

The type in the British Museum is a ♀ without fore legs; but evidently belongs here. The median lines are almost obsolete.

C. lewisi Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 137, pl. 4, f. 10, *Pleonectopoda*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., ii, 272, *Agrotis*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 303, *Agrotis*.

HABITAT.—Colorado.

The type is in the British Museum. It is not so near *tessellata* as the description indicates; but it is very near *colata*—so near indeed that except for the ground color there is little difference. It will probably result eventually that the two are identical. Since my return from England, Mr. Bruce has sent me this species for identification.

C. divergens Wlk.*

1856. Wlk., C. B. Mus., Het., x, 327, *Agrotis*.

versipellis Grt.

1875. Grt., Can. Ent., vii, 172, pl. 1, f. 9, *Agrotis*.

1879. Grt., Bull. Geol. Surv., v, 206, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 380, pr. syn.

HABITAT.—Northern States to Colorado; California in June; Canada in June; Maine and Massachusetts in July.

The types are in the British Museum, and Mr. Butler was quite correct in the synonymy given.

C. redimicula Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 165, *Agrotis*.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 57, *Agrotis*.

1879. Streck., Rept. Chief Eng., 1878-'79, v, 1861, *Agrotis*.

HABITAT.—Northern States east of the Rocky Mountains; Canada; Colorado, Glenwood Springs, August to October; New York in June, July, August, and September; Massachusetts in August.

The type is in the Tepper collection.

C. strigilis Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 81, *Agrotis*.

HABITAT.—Vancouver.

The type is in the British Museum, and is a species I had not before seen. It is a very heavily built insect, like *redimicula* in general habitus, the whitish included spaces of median lines prominent.

C. fusimacula Smith.

HABITAT.—New Mexico.

The type is in the Rutgers College collection.

C. atrifera Grt.

1878. Grt., Bull. Geol. Surv., iv, 173, *Agrotis*.

1880. Grt., Bull. Geol. Surv., vi, 260, *Agrotis*.

HABITAT.—Sierra Nevada, California; Colorado, Glenwood Springs in September; Maine.

The type is in the British Museum.

C. tesselloides Grt.*

1880. Grt., Bull. Geol. Surv., vi., 566, *Agrotis*.

HABITAT.—California; Arizona; Montana; Colorado.

The type is in the British Museum.

C. allens Grt.*

1875. Grt., Can. Ent., vii, 67, *Agrotis*.

HABITAT.—California; Arizona; Nevada; Colorado.

The type is in the British Museum.

C. perlentans Wlk.

1856. Wlk., C. B. Mus., Het., x, 352, *Agrotis*.

HABITAT.—"New York."

I have not been able to find this species in the British Museum, nor has Mr. Butler been able to trace it. Messrs. Grote and Robinson saw it, and to them it suggested a rubbed *tritici*. It is quite likely to be either *tessellata* or *insulsa*, and is almost certainly a species known to us under another name.

Here ends the agrotid series. I have omitted *Agrotis vetusta* Wlk., of which the type is lost, and which can not possibly be made out from the description. The latter will be found in my "Revision" if anyone cares to try to identify it.

Genus *RICHIA* Grt.

1887. Grt., Can. Ent., XIX, 44.

Mr. Grote separates this from *Ammaconia*, I can not say at present how correctly, since I have no European material for comparison. If the characters given by Mr. Grote hold, the genus is probably good. They will not hold for *sculptilis*, certainly, for I redescribed that in *Agrotis*, to which it belongs. *Ammaconia* is by Lederer, Noct. Eur., 1857, 97.

R. chortalis Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 272, *Agrotis*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 5, 74, pl. 3, f. 9, *Ammaconia*.

1879. Grt., Bull. Geol. Surv., V, 207, *Agrotis*.

1887. Grt., Can. Ent., XIX, 44, *Richia*.

var. *aratrix* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 74, pl. 3, f. 8, *Ammaconia*.

1879. Grt., Bull. Geol. Surv., V, 207, *Agrotis*.

1887. Grt., Can. Ent., XIX, 44, *Richia*, an dim. var. pr.

HABITAT.—Texas, in November; Arizona; Colorado, Glenwood Springs, September and October; New Mexico.

Types of both forms are in the British Museum. The exact relation of the two forms to each other is not yet known. They are not geographic races, nor seasonal varieties.

R. parentalis Grt.*

1879. Grt., No. Am. Ent., I, 44, *Agrotis*.

1881. Grt., Trans. Kans. Ac. Sci., VII, 66, *Agrotis*.

1882. Grt., Ill. Essay, 53, pl. I, f. 13, *Ammaconia*.

1887. Grt., Can. Ent., XIX, 44, *Richia*, et var. *decipiens*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 383.

var. *decipiens* Grt.

1879. Grt., No. Am. Ent., I, 45, *Agrotis*.

1882. Grt., New List, 26, *Ammaconia*.

1887. Grt., Can. Ent., XIX, 44, *Richia*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 383, an var. *cuprea*.

HABITAT.—Colorado, Glenwood Springs, September and October; New Mexico.

Types of species and variety are in the British Museum. Mr. Butler suggests that these are the same as the European *Agrotis cuprea* and claims to have typical *cuprea* from Washington. It would take a great deal of comparison to convince me of the correctness of this reference.

R. distichoides Grt.

1883. Grt., Trans. Kans. Ac. Sci., VIII, 48, *Ammaconia*.

HABITAT.—New Mexico.

The type is with Prof. Snow.

Genus **ANYTUS** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 144

A. privatus Wlk.*

1857. Wlk., C. B. Mus., Het., XI, 521, *Polia*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 384, *Anytus sculptus* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 114, pl. 3, f. 1, *Xylina*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 145, *Anytus*.

1880. Grt., No. Am. Ent., I, 93, *Agrotis*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 384, pr. syn.
var. *planus* Grt.

1882. Grt., Can. Ent., XIV, 183, *Anytus*.

HABITAT.—Canada in August; Eastern and Middle States; Colorado; New York and New Hampshire, August and September.

Types of *privatus* and *sculptus* are in the British Museum, and Mr. Butler is correct in uniting them. The type of *planus* is in the Hill collection.

Mr. Butler thinks this is much nearer to *Pharætra*, an Aretiid, than to the Noctuidæ. I do not know *Pharætra*; but I have no serious doubt as to the correctness of the present location of *Anytus*.

Genus **EUCOPTOCNEMIS** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 13.

E. fimbriaris Gn.

1852. Gn., Spec. Gen., Noct., I, 172, *Heliophobus*.

1856. Wlk., C. B. Mus., Het., IX, 208, *Heliophobus*.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 134, *Pleonectopoda*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 13, *Eucoptocnemis obvia* Wlk.

1858. Wlk., C. B. Mus., Het., XV, 1707, *Graphiphora*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 384, pr. syn.

HABITAT.—North America; Massachusetts.

The types are in the British Museum, and represent a species I had never seen. I wonder whether Mr. Morrison really had this species before him when he wrote in 1874? I have seen specimens of *Agrotis northingtoni* labeled *fimbriaris* in Mr. Morrison's handwriting in the National Museum and elsewhere, and the description given fits well to what I have seen of that species. Unfortunately the wing form which

might decide is not given. In color and maculation *worthingtoni* and *fimbriaris* agree wonderfully well, and both have lengthily pectinated antennæ. But *fimbriaris* has oddly short, broad wings, while the others are normal for *Porosagrotis*. Walker's species has the "locality unknown."

Genus **AGROTIPHILA** Grt.
1875. Grt., Ann. Lyc. Nat. Hist., N. Y., xi, 107.

A. alaskæ Grt.*

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 84, pl. 4, f. 1, *Agrotis*.
1890. Smith, Bull. U. S. Nat. Mus., No. 38, 54, *Agrotiphila*.

HABITAT.—Alaska.

The type is in the British Museum.

A. staudingeri Moeschl.*

1862. Moeschl., Wien. Ent. Monatschr., vi, 132, pl. I, f. 4, *Agrotis*.
1891. Smith, List Lepidoptera, 40, *Agrotiphila*.
1891. Smith, Trans. Am. Ent. Soc., xviii, 133, *Agrotiphila montana* Morr.
1875. Morr., Ann. Lyc. Nat. Hist., N. Y., xi, 95, *Agrotis*.
1875. Grt., Ann. Lyc. Nat. Hist., N. Y., xi, 107, *Agrotiphila*.
1875. Grt., List Noctuidæ, 17, *Agrotiphila*.
1891. Smith, List Lepidoptera, 40 = *staudingeri*.
1891. Smith, Trans. Am. Ent. Soc., xviii, 133 = *staudingeri detracta* Wlk.

HABITAT.—Labrador; White Mountains; Montana; Colorado 12,000 feet, July 22 to August 12.

The type of *detracta* is in the British Museum; that of *staudingeri* I have seen by the courtesy of Mr. Moeschler, and there are specimens named by Moeschler in the Berlin Museum. Mr. Morrison's type is in the Tepper collection. These all refer to one species, no specimens from Colorado being in any collection. I have been unable to find any description for *detracta* Wlk., and it may be that the name will prove the earliest if it is at all published.

A. colorado Smith.*

1891. Smith, Trans. Am. Ent. Soc., xviii, 133, *Agrotiphila*.

HAITAT.—South Park, Colorado.

Types are in the National Museum and in the Neumægen collection.

A. rigida Smith.

1891. Smith, Trans. Am. Ent. Soc., xviii, 133, *Agrotiphila*.

HABITAT.—South Park, Colorado.

The type is in Mr. Neumægen's collection.

This genus connects *Agrotis* with *Anarta*, and emphasizes also the Heliothine tendencies of *Porosagrotis* and *Carneades*.

Genus **PSAPHIDIA** Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 447.

Under the title *Dicopinae*, the genera *Dicopis*, *Eutolype*, and *Copipanolis* are monographically treated by me in the Proceedings of the U. S. National Museum for 1892, Vol. xv, pp. 52–63. All the species are fully described there, and special reference to this paper is not made except where necessary to authenticate a species or give authority for a change. The generic term *Psaphidia* Wlk., must, under the rules, replace *Dicopis*, though not nearly so appropriate and certainly not as well described.

P. grotei Morr.*1874. Morr., Bull. Buff. Soc. Nat. Sci., i, 274, *Valeria*.1882. Smith, Bull. Bkln. Ent. Soc., v, 44, ♀ an *Valeria*.1883. Grt., Proc. Am. Phil. Soc., xxi, 146, 163, *Copiraleria*.1892. Smith, Proc. U. S. Nat. Mus., xv, 54, *Dicopis*.

HABITAT.—Canada, Eastern, Middle, and Central States; April and May.

The type is in the British Museum.

P. resumens Wlk.*1865. Wlk., C. B. Mus., Het., xxxii, 448, *Psaphidia*.
viridescens Wlk.1865. Wlk., C. B. Mus., Het., xxxii, 601, *Cymatophora*.1868. Grt. & Rob., Trans. Am. Ent. Soc., ii, 86, *Hadena*.1882. Grt., Ill. Essay, 40, *Dicopis*.1892. Smith, Proc. U. S. Nat. Mus., xv, 55, ♀=*muralis*.
muralis Grt.1874. Grt., 6th Rept. Peab. Ac. Sci., App. 23, *Dicopis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 77, pl. i, f. 1, *Dicopis*.1875. Grt., Stett. Ent. Zeit., xxxvi, 194, *Dicopis*.

HABITAT.—New York to Florida and Texas; Missouri in April; Texas in March; Massachusetts in April and May.

All the types are in the British Museum and refer to one species only. *P. resumens* was described as “near *Charadra*,” and the latter as a Bombycid. A specimen of this same species also bears the name *Noto-denta gemina*. In the Berliner Museum is a specimen labeled *Acronycta initialis*, without any name of author.

P. electilis Morr.1875. Morr., Proc. Bost. Soc. Nat. Hist., xviii, 114, *Dicopis*.

HABITAT.—Pennsylvania.

I do not know this species and have not seen the type.

D. thaxterianus Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 196, *Dicopis*.1881. Grt., Papilio, i, 48, *Dicopis*.

HABITAT.—Massachusetts in April; Texas.

The types are with Dr. Thaxter, and represent a very pretty species.

Genus **EUTOLYPE** Grt.

1874. Grt., Proc. Ac. Nat. Sci., Phil., xxvi, 198.

E. bombyciformis Smith.*

1892. Smith, Proc. U. S. Nat. Mus., xv, 58, *Eutolype*.

HABITAT.—Massachusetts to Missouri, in March.

The type is in the U. S. National Museum. It is the species usually labeled *Dicopis electilis* in collections.

E. depilis Grt.*

1881. Grt., Papilio, i, 48, *Dicopis*.

1892. Smith, Proc. U. S. Nat. Mus., xv, 58, *Eutolype*.

HABITAT.—New York to Ohio; Texas, in March.

The Texan specimen before Mr. Grote is now in the National Museum. The Ohio specimen, upon which the species is really based, is in Mr. Neumögen's collection.

E. rolandi Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., xxvi, 198, *Eutolype*.
vernalis Morr.

1874. Morr., Proc. Bost. Soc. Nat. Hist., xvii, 133, *Copipanolis*.

1875. Grt., Can. Ent., vii, 17, pr. syn.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 210, pr. syn.

HABITAT.—Massachusetts in April; Missouri in April and May; Texas in February and March.

The type is in the British Museum.

E. damalis Grt.

1880. Grt., Bull. U. S. Geol. Surv., v, 208, *Dicopis*.

1881. Grt., Papilio, i, 49, *Dicopis*.

1892. Smith, Proc. U. S. Nat. Mus., xv, 60, *Eutolype*.

HABITAT.—California.

The type is in the Edwards collection.

Genus **COPIPANOLIS** Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., App., 25.

C. borealis Smith.

1892. Smith, Proc. U. S. Nat. Mus., xv, 61, *Copipanolis*.

HABITAT.—St. Anthony's Park, Minnesota, in April.

The type is in the collection of Mr. H. Schoenborn, of Washington, D. C.

C. cubilis Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., App., 25, *Copipanolis*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 77, pl. i, f. 6, *Copipanolis*.

1875. Grt., Stett. Ent. Zeit., xxxvi, 197, *Copipanolis*.

HABITAT.—Michigan, March; Massachusetts, March, April, May.

The type is in the British Museum. It agrees with the figure and description and is fully distinct from the Texan form usually named *cubilis* in collections.

C. fasciata Smith.*

1892. Smith, Proc. U. S. Nat. Mus., xv, 61, *Copipanolis*.

HABITAT.—Missouri in April; Texas in January and February.

Types are in the National Museum. This is the species usually named *cubilis* in collections.

C. stigma Smith.

1890. Smith, Ent. Amer., vi, 220, *Copipanolis*.

HABITAT.—Florida.

The type is in Mrs. Slosson's collection.

Genus **BARATHRA** Hbn.

1816. Hbn., Verzeichniss, 218.

A description of this genus and of the species referable to it, will be found in the Proc. U. S. Nat. Mus., xii, 457. *Copimamestra* Grt., has the same type as *Barathra* Hbn., and goes into the synonymy.

B. occidenta Grt.

1833. Grt., Ann. and Mag. Nat. Hist., 1883, 53, *Copimamestra*.

1883. Grt., Trans. Kans. Ac. Sci., viii, 55, *Copimamestra*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 458, *Barathra*.

HABITAT.—New Mexico.

Types are with Prof. Snow and Mr. Neumögen.

B. curialis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 470, *Copimamestra*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 458, *Barathra*.

HABITAT.—Kittery Point, Maine; Franconia, New Hampshire.

The type is with Dr. Thaxter.

Genus **ADMETOVIS** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 133.

A. oxymorus Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 133, pl. iv, f. 5, *Admetovis*.

HABITAT.—Sierra Nevada, California; Colorado.

The type is in the Edwards collection. What Mr. Grote describes as the male is quite a different species which I have described as *Hamestra prodeniformis*. The right of *Admetovis* to generic rank is decidedly questionable.

Genus **MAMESTRA** Ochs.

1816. Ochs., Schmett. Eur., iv, 76.

A monographic revision of the species of this genus will be found in the Proc. U. S. Nat. Mus., xiv, 197-276, Pl. VIII—XI, 1891. This paper contains descriptions of all the species, but is not referred to in the bibliography save when necessary to establish synonymy or generic reference. Where not otherwise stated, my identifications are correct.

M. discalis Grt.*1877. Grt., Bull. Geol. Surv., iii, 797, *Mamestra*.

HABITAT.—Colorado, Glenwood Springs, September and October; California; New Mexico.

The type is in the British Museum.

M. rogenhoferi Mäeschl.1870. Mäeschl., Stett. Ent. Zeit., xxxi, 269, *Mamestra*.

HABITAT.—Labrador.

The type is in the Mäeschler collection.

M. nimbosa Gn.*1852. Gn., Spec. Gen., Noct., ii, 77, *Aplecta*.1857. Wlk., C. B. Mus., Het., xi, 555, *Eurois*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 102, *Mamestra*.1875. Speyer, Stett. Ent. Zeit., xxxvi, 142, 349, *Mamestra*.

HABITAT.—Canada; Northern, Eastern, and Middle States, June, July, and August; Colorado; British Columbia.

The type is in the British Museum.

M. imbrifera Gn.*1852. Gn., Spec. Gen., Noct., ii, 76, *Aplecta*.1857. Wlk., C. B. Mus., Het., xi, 555, *Eurois*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 102, *Mamestra*.1875. Speyer, Stett. Ent. Zeit., xxxvi, 144, *Mamestra*.

HABITAT.—Canada; Northern, Eastern, and Middle States in July; Colorado.

The type is in the British Museum.

M. purpurissata Grt.*1864. Grt., Proc. Ent. Soc. Phil., iii, 82, pl. i, f. 5, *Eurois*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 102, *Mamestra*.

var. *juncimacula* Smith.*

1882. Smith, Bull. Bkln. Ent. Soc., v, 67, *Hadena*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 206, an var. pr.

HABITAT.—Northern, Eastern, and Middle States; Utah; Colorado; July to September.

Mr. Grote's type is in the British Museum; mine is in the National Museum. A series of specimens received from Colorado, collected by Bruce, are all of the variety, indicating a geographical race at least.

M. insolens Grt.*

1874. Grt., Bull. Buff. Nat. Sci., II, 65, *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 130, *Mamestra*.

arietis Grt.

1879. Grt., Bull. Geol. Surv., V, 207, *Mamestra*.

1881. Grt., Can. Ent., XIII, 130, pr. syn.

carina, Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 158, *Tæniocampa*.

1891. Smith, Proc. U. S. Nat. Mus., XIV, 207, pr. syn.

HABITAT.—California; August and October.

Mr. Grote's types are in the British Museum. Mr. Morrison's is in the Tepper Collection.

M. leucogramma Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 140, *Dianthæcia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 64, *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 130, *Mamestra*.

HABITAT.—California; April, August, October.

The types are in the Edwards collection and in the British Museum. Specimens exactly like them are in the National Museum.

M. lepidula Smith.*

1887. Smith, Proc. U. S. Nat. Mus., X, 463, *Mamestra*.

HABITAT.—Texas.

The type is in the National Museum; a duplicate is in the Edwards collection.

M. determinata Smith.*

1891. Smith, Proc. U. S. Nat. Mus., XIV, 209, *Mamestra*.

HABITAT.—Colorado. foothills.

The type is in the National Museum.

M. meditata Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 104, *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 130, *Mamestra*.

HABITAT.—Canada to Virginia, west to the Mississippi; May, June, August, and September; Kansas, August.

The type is in the British Museum.

M. lustralis Grt.*

1875. Grt., Can. Ent., VII, 223, *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 127, *Mamestra*.

HABITAT.—Canada to Virginia; west to Wisconsin and Colorado; Adirondacks in July.

The type is in the British Museum.

M. detracta Wlk.*

1857. Wlk., C. B. Mus., Het., xi, 733, *Hadena*.
claviplena Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 194, *Mamestra*.

1881. Grt., Can. Ent., xiii, 128, pr. syn.

HABITAT.—Canada, south to Virginia, west to Wisconsin, and New Mexico; Canada, in July; Massachusetts and New Jersey, in June.

Walker's type is in the British Museum; Mr. Grote's specimen is in the Lintner collection.

M. gnata Grt.*

1882. Grt., Can. Ent., xiv, 170, *Mamestra*.

HABITAT.—Arizona; New Mexico.

The type is in Mr. Neumögen's collection.

M. distincta Hbn.*

1810. Hbn., Samml. Ex. Schmett., i, pl. 194, *Achatia*.

1816. Hbn., Verzeichniss, 219, *Astrapotis*.

1852. Gn., Spec. Gen., Noct., ii, 91, *Hadena*.

1857. Wlk., C. B. Mus., Het., xi, 583, *Hadena*.

1868. G. & R., Trans. Am. Ent. Soc., ii, 197, pl. 3, f. 72, *Hadena*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 156, *Mamestra*.
ritis French.

1879. French, Can. Ent., xi, 76, *Dicopsis*.

1879. Grt., No. Am. Ent., i, 16, pr. syn.

HABITAT.—Canada to Texas; Illinois and Central States to central Colorado; Delaware in April.

M. crotchii Grt.

1880. Grt., Bull. Bkln. Ent. Soc., iii, 29, *Mamestra*.

var. *fusculenta* Smith.*

1891. Smith, Proc. U. S. Nat. Mus., xiv, 213, *Mamestra*.

HABITAT.—Colorado; Oregon; California, in June.

The type of the species is in the British Museum. The type of the variety is in the National Museum.

M. farnhami Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 103, pl. 3, f. 2, *Mamestra*.

HABITAT.—Colorado, Glenwood Springs, in August.

A specimen marked "type" is in the British Museum; another marked in the same way is in the Edwards collection.

M. liquida Grt.*

1881. Grt., Papilio, i, 58, *Mamestra*.

HABITAT.—Washington; Oregon, May and June; Colorado.

The type is in the British Museum.

M. capsularis Gn.*

1852. Gn., Sp. Gen., Noct., II, 22, pl. 8, f. 3, *Dianthæcia*.

1857. Wlk., C. B. Mus., Het., XI, 506, *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 128, *Mamestra*.
propulea Wlk.

1857. Wlk., C. B. Mus., Het., XI, 529, *Raphia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.

HABITAT.—Middle States; Maryland; Florida; Colorado; Kansas, in June.

The types of both the Guenée and Walker species are in the British Museum and were correctly referred by Mr. Grote. Mr. Walker's description has absolutely no applicability to this insect, which led me to doubt the correctness of the synonymy. The specimen in the National Museum is correctly identified.

M. vittula Grt.

1882. Grt., Trans. Kans. Acad. Sci., VIII, 48, *Mamestra*.

HABITAT.—New Mexico.

The type is with Mr. Neumøgen.

M. prodeniformis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., IX, 464, *Mamestra*.

HABITAT.—Southwest Arizona; New Mexico.

A type is in the National Museum; another with Mr. Neumøgen.

M. atlantica Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, *Mamestra*.

1875. Grt., Check List, Noct., 7, *Mamestra*.

1881. Grt., Can. Ent., XIII, 128, †=*dissimilis*.

1889. Butler, Trans. Ent. Soc. Lond., 385=*dissimilis*.

ω-latinum † Gn.

1852. Gn., Sp. Gen., Noct., II, 105, *Hadena*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, pr. syn.

discolor Speyer.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 142, *Mamestra dissimilis* var.

1881. Grt., Can. Ent., XIII, 128, pr. var.

1882. Grt., New List, 26, pr. syn.

HABITAT.—Canada; Atlantic States to Virginia, west to Wisconsin; June, July, and August.

Mr. Grote's type is in the British Museum, placed under *dissimilis* by Mr. Butler. It will require an agreement in sexual structure to convince me of the identity of the American with the European species.

M. radix Wlk.*

1856. Wlk., C. B. Mus., Het., X, 332, *Agrotis*.

1890. Smith, Bull. U. S. Nat. Mus., No. 38, 210, *Agrotis*.

dimmocki Grt.

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 420, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., XIV, 269, *Mamestra*.

1891. Butler, Entomologist, XXIV, 240, pr. syn.

desperata Smith.

1891. Smith, Proc. U. S. Nat. Mus., XIV, 221, *Mamestra*.

HABITAT.—Nova Scotia; Hudson's Bay territory; Maine; New Hampshire; Colorado; Sierra Nevada, California.

The types of the Grote and Walker species are in the British Museum, and are the same as my *desperata*. Mr. Butler's reference was not made until October 1891, after my revision was published. I had had the species as *dimmocki*, and had so named it in the National Museum and elsewhere. Mr. Grote's description misled me and induced me to correct a supposed misidentification. The type is somewhat rubbed; but the M of the s. t. line is distinct, not wanting, as stated by Mr. Grote.

M. canadensis Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 464, *Mamestra*.

HABITAT.—New Brunswick.

The type is with Mr. Thaxter.

M. nevadæ Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 84, *Mamestra*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 385 = *thalassina*.

HABITAT.—Sierra Nevada, California.

This seems a good species, almost midway between *subjuncta* and *atlantica*. I had not seen it before, the specimen in the Edwards collection being erroneously named.

M. subjuncta G. and R.

1868. G. & R., Trans. Am. Ent. Soc., II, 198, pl. 3, f. 71, *Hadena*.

1869. Riley, 1st Rept. Ins. Mo., 84, pl. I, f. 14-17, *Hadena*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 282, *Mamestra*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, *Mamestra*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 138, *Mamestra*.

HABITAT.—Canada; Northern, Eastern, and Middle States; Ohio; Minnesota; Colorado; Nebraska; New Mexico, June to September; Oregon, May and June.

A specimen, not the type, is in the British Museum.

M. grandis Bdv.*

1840. Bdv., Gen. et Ind. Meth., 120, No. 950, *Hadena*.

1841. Gn., Noct. Ind. Meth., 244, *Hadena*.

1852. Gn., Spec. Gen., Noct., II, 105, pl. VIII, f. 10, *Hadena*.

1857. Wlk., C. B. Mus., Het., x1, 578, *Hadena*.

1857. Led., Noct. Eur., 90, *Mamestra*.

1883. Thaxter, Papilio, III, 17, *Mamestra*.

libera Wlk.

1856. Wlk., C. B. Mus., Het., ix, 179, *Xylophasia*.

1882. Grt., Ill. Essay, 44, pr. syn.

HABITAT.—Greenland; Lapland; Canada; Maine to Pennsylvania; west to Illinois, Wisconsin; Minnesota and Colorado, May, June, and October.

The arctic localities are from Walker, whose type is in the British Museum, and is what we know as *grandis*.

M. invalida* Smith.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 225, *Mamestra*.

HABITAT.—Colorado; California—Sierra Nevada, Placer County in June; Portland, Oregon, May and June.

Types are in the National Museum and in the Edwards collection.

M. trifolii* Rott.

1776. Rott., Naturf., ix, 131, *Noctua*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 137, *Mamestra*.
chenopodii Fabr.

1787. Fabr., Mant. Ins., ii, 146, *Noctua*.

1793. Gmel., ed. Linn. Syst. Nat., 2542, *Noctua*.

1793. Fabr., Ent. Syst., iii, 2, 68, *Noctua*.

1811. Oliv., Enc. Meth., viii, 303, *Noctua*.

1816. Hbn., Verzeichnisse, 219, *Diataraxia*.

1852. Gn., Spec. Gen., Noct., ii, 97, *Hadena*.

1857. Wlk., C. B. Mus., Het., xi, 570, *Hadena*.

1881. French, Can. Ent., xiii, 23, larva.

1881. Coquillett, Papilio, i, 7, *Mamestra*.
albifusa Wlk.

1857. Wlk., C. B. Mus., Het., xii, 753, *Hadena*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 104, *Mamestra*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 202, pr. syn.

1881. Grt., Can. Ent., xiii, 128, pr. syn.
glaucovaria Wlk.

1860. Wlk., Can. Nat. and Geol., v, 255, *Ayamca*.

1877. Grt., Can. Ent., ix, 28, pr. syn.
major Speyer.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 138, pr. var.

1881. Grt., Can. Ent., xiii, 128, pr. var.
var. *oregonica* Grt.

1881. Grt., Can. Ent., xiii, 230, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 227, pr. var.

HABITAT.—Europe and North America; May, June, August, and September.

The types of *albifusa* and *oregonica* are in the British Museum; that of *glaucovaria* is in the collection of the Ent. Soc. of Ontario. I have omitted *marmorosa* as a variety, because it does not agree with any of our forms, and may indeed be specifically distinct. Mr. Neumøgen also has a "type" of *oregonica*.

M. u-scripta* Smith.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 228, *Mamestra*.

HABITAT.—Sierra Nevada, California; Colorado.

Types are in the National Museum and in the Edwards collection.

M. rosea Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., 11, 119, *Mamestra*.

HABITAT.—Canada; Northern and Eastern States; Colorado, Oregon, New York, and Massachusetts, in May and June.

The type is in the British Museum.

M. congermana Morr.*

1874. Morr., Can. Ent., vi, 106, *Hadena*.

1878. Grt., Bull. Geol. Surv., iv, 187, *Mamestra*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 39, *Mamestra*.

HABITAT.—Northern, Eastern, and Middle States; Colorado; May 12-26, in New York.

The type is in the Tepper collection.

M. rubefacta Morr.*

1874. Morr., Can. Ent., vi, 249, *Ceramica*.

1880. Grt., Can. Ent., XII, 185, = *Mamestra vindemialis*.

1881. Grt., Can. Ent., XIII, 128, = *M. vindemialis*.

HABITAT.—Canada; Eastern, Northern, and Middle States; May and June.

Mr. Grote's reference of this species to *vindemialis* Gn., is incorrect. The type of Guenée's species is in the British Museum, and is said to be from Florida, while I have never seen Mr. Morrison's species from south of Pennsylvania. I have referred *vindemialis* to *Taeniocampa*, where notes on it should be sought. I do not know where Mr. Morrison's type can be found.

M. picta Harr.*

1847. Harr., Rept. Ins. Mass., 329, *Mamestra*.

1862. Harr., Inj. Ins., Flint ed., 452, ff. 223, 224, *Mamestra*.

1870. Riley, 2d Rept. Ins. Mo., 112, f. 82, *Mamestra*.

1872. Lint., Ent. Cont., III, 137, *Mamestra*.

1882. Grt., Papilio, II, 99, *Mamestra*.

exusta Gn.

1852. Gn., Spec. Gen., Noct., I, 344, *Ceramica*.

1856. Wlk., C. B. Mus., Het., x, 417, *Ceramica*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, pr. syn.
contraria Wlk.

1856. Wlk., C. B. Mus., Het., ix, 78, *Mythimna*.

1868. G. & R., Trans. Am. Ent. Soc., II, 77, pr. syn.

1882. Grt., Ill. Essay, 41, pr. syn.

HABITAT.—Canada to Virginia; west to Nebraska; Wisconsin; Colorado; Canada in June; New York and New Jersey, June, August, and September.

Types of the Walker and Guenée names are in the British Museum and have been correctly referred to Harris's species. A type of *exusta* is also to be found in the Jardin des Plantes at Paris.

M. cristifera Wlk.*

1858. Wlk., C. B. Mus., Het., xv, 1654, *Acronycta*.
 1882. Grt., Ill. Essay, 38, an *Hadenid*?
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 385, *Mamestra*.
 lubens Grt.
 1875. Grt., Trans. Am. Ent. Soc., v, 113, *Mamestra*.
 1875. Grt., Proc. Ac. Nat. Sci. Phil., 425, *Mamestra*.
 1875. Morr., Proc. Bost. Soc. N. H., xviii, 118, *Mamestra*.
 1881. Grt., Can. Ent., xiii, 127, *Mamestra*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 385, pr. syn.
 rufula Morr.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 62, *Mamestra*.
 1875. Grt., Proc. Ac. Nat. Sci. Phil., 425, pr. syn.
 1881. Grt., Can. Ent., xiii, 127, pr. syn.
 brassica Grt.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 103, *Mamestra*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 12, *Mamestra*.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 62, pr. syn.
 1875. Grt., Stett. Ent. Zeit., xxxvi, 341, pr. syn.

HABITAT.—Hudson's Bay Territory; Canada; Maine to Pennsylvania, west to Colorado; Oregon, May and June.

The types of the Walker and Grote species are in the British Museum and are the same.

M. assimilis Morr.*

1874. Morr., Bull. Buff. Soc. Nat. Sci., ii, 119, *Mamestra*.
 1881. Goodell, Papilio, i, 15, larva.
 var. *pulverulenta* Smith.
 1887. Smith, Proc. U. S. Nat. Mus., x, 468, *Mamestra*.

HABITAT.—Canada; Northern and Eastern States; Northern New York in July; Massachusetts in June and July.

The type is in the Tepper collection; Mrs. Fernald has the type of the variety.

M. latex Gn.*

1852. Gn., Sp. Gen., Noct., ii, 78, *Aplecta*.
 1857. Wlk., C. B. Mus., Het., xi, 556, *Eurois*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 103, *Mamestra*.
 demissa Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 728, *Apamea*.
 1868. G. & R., Trans. Am. Ent. Soc., ii, 78, pr. syn.
 1882. Grt., Ill. Essay, 44, pr. syn.

HABITAT.—Canada; Northern, Eastern, and Middle States. May, June, July.

The types of both names are in the British Museum and have been correctly applied to the same species.

M. passa Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 139, *Mamestra*.1875. Grt., Can. Ent., vii, 102, ♀ = *pensilis*.**HABITAT.**—California.

The type is in the Tepper collection, and it is the only specimen thus far known to me.

M. adjuncta Bdv.*1841. Bdv., in Gn., Noct. Ind. Meth., 243, *Miselia*.1852. Gn., Spec. Gen., Noct., i, 199, *Mamestra*.1856. Wlk., C. B. Mus., Het., ix, 234, *Mamestra*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 108, *Hadena*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 309, *Mamestra*.1874. Lint., Ent. Cont., iii, 161; larva on *Solidago*.1877. Goodell, Can. Ent., ix, 60; larva on *Pteris aquilina*.1884. Bean, Can. Ent., xvi, 68; larva on *Wigelia rosea*.

HABITAT.—Canada; Northern, Eastern, and Middle States, west to Illinois, Missouri, Minnesota. May, June, August, and October.

Types are in the British Museum, and in the Oberthür collections.

M. variolata Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 467, *Mamestra*.**HABITAT.**—Washington.

Types are in the National Museum and in Mr. Graef's collection.

M. glaciata Grt.1882. Grt., Can. Ent., xiv, 170, *Mamestra*.**HABITAT.**—Arizona; Colorado.

The type is with Mr. Neumögen.

M. minorata Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 467, *Mamestra*.**HABITAT.**—California; Colorado.

The type is in the Edwards collection.

M. defessa Grt.*1880. Grt., Can. Ent., xii, 88, *Mamestra*.**HABITAT.**—California—May 22.

The type is in the British Museum.

M. chartaria Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 138, pl. 4, f. 12, *Mamestra*.**HABITAT.**—California; Washington; Colorado; June.

A type is in the British Museum; another in the Cambridge collection.

M. repentina Morr.1875. Morr., Proc. Bost. Soc. N. H., xviii, 118, *Mamestra*.1891. Smith, Proc. U. S. Nat. Mus., xiv, 242, *Mamestra*.

HABITAT.—West Hoboken, New Jersey.

The type is in Mr. Meyer's collection. I have in my Revision of the species doubted the American habitat of the species, but have had no opportunity of confirming my doubts.

M. brachiolum Harv.1876. Harv., Can. Ent., viii, 6, *Mamestra*.

HABITAT.—Texas; Arizona.

The type is in the British Museum.

M. beanii Grt.1877. Grt., Can. Ent., ix, 87, *Mamestra*.1879. Grt., No. Am. Ent., i, 12, *Mamestra*.

HABITAT.—Illinois; Texas; Colorado.

The type is in the British Museum. The species is correctly placed in my Revision; but the type is a much larger specimen than any I had seen.

M. legitima Grt.*1864. Grt., Proc. Ent. Soc. Phil., iii, 82, pl. 2, f. 4., *Apamea*.1874. Grt., Proc. Bost. Soc. N. H., xvi, 241, *Mamestra*.

1892. Edw. & Elliott, Bull. Am. Mus. N. H., iv, 77, larva.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States; June, July, August, September; Oregon, Portland in May.

The type should be, but is not, in the collection of the Amer. Ent. Soc. Dr. Riley has written the life history of this species and has figured it in his reports as U. S. Entomologist.

N. ilacina Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., ii, 119, *Mamestra*.*illabefacta* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 141, *Mamestra*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 211, pr. syn.

1875. Grt., Can. Ent., vii, 58, pr. syn.

1879. Grt., Can. Ent., xi, 128, pr. var.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States in July; Colorado; New Mexico.

The type of the species is in the British Museum. Mr. Morrison's type is in the Tepper collection, and another, also marked "type," is in the British Museum.

M. rugosa Morr.*1875. Morr., Proc. Bost. Soc. Nat. Hist., xviii, 119, *Mamestra*.

HABITAT.—Maine.

M. noverca Grt.*1878. Grt., Can. Ent., x, 236, *Mamestra*.

HABITAT.—California; Colorado, Glenwood Springs in August; Arizona; Nebraska.

The type is in the British Museum.

M. goodelli Grt.*1875. Grt., Can. Ent., vii, 223, *Mamestra*.

HABITAT.—Canada; Northern, Eastern and Middle States; west to Nebraska; May, June, July, August.

Mr. Grote's type is in the British Museum.

M. quadrata Smith.*1891. Smith, Proc. U. S. Nat. Mus., xiv, 248, *Mamestra*.

HABITAT.—Placer County, California; June and July.

The types are in the National Museum.

M. obscura Smith.*1891. Smith, Proc. U. S. Nat. Mus., x, 468, *Mamestra*.

HABITAT.—Wisconsin; ? Arizona.

The type is in the Tepper collection.

M. ectypa Morr.*1875. Morr., Proc. Bost. Soc. N. H., xviii, 118, *Mamestra*.
bella Grt.1883. Grt., Papilio, iii, 30, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 249, pr. syn.

HABITAT.—New Jersey; West Virginia.

Mr. Morrison's type is in the Meyer collection; that of Mr. Grote's species with Mr. Neumögen.

M. renigera Steph.*1829. Steph., Ill. Brit. Ent., Haust., ii, 16, *Celæna*.1856. Wlk., C. B. Mus., Het., x, 262 = *herbimacula*.1869. Riley, 1st Rept. Ins. Mo., 86, f. 31, *Mamestra*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 16, *Hadena*.1874. Grt., Can. Ent., vi, 132, *Mamestra*.1881. Riley, Index and Suppl't. to Mo. Repts., 56, *Mamestra*.

1883. Edw., Papilio, iii, 133; larva.

herbimacula Gn.1852. Gn., Spec. Gen., Noct., i, 223, *Celæna*.1857. Wlk., C. B. Mus., Het., x, 262, *Celæna*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 16, pr. syn.

infecta Wlk.1856. Wlk., C. B. Mus., Het., x, 263, *Celæna*.

HABITAT.—Canada, south to Georgia and Mississippi, west to Nebraska; Colorado; May, June, July, August, September.

The types of *insecta* and *herbimacula* are both in the British Museum. Walker's type is quite a respectable specimen and should not have been doubtful.

M. stricta* Wlk.

1865. Wlk., C. B. Mus., Het., Suppl., III, 728, *Hadena?*

1889. Butler, Trans. Ent. Soc. Lond., 1889, 386 = *Celæna egens*.

ferrea Grt.

1875. Grt., Can. Ent., VII, 25, *Mamestra*.

1881. Grt., Can. Ent., XIII, 130, *Mamestra*.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 386, pr. syn.

var. *cinnabarina* Grt.*

1874. Grt., Proc. Bost. Soc. Nat. Hist., XVI, 241, *Mamestra*.

HABITAT.—California; Oregon; Washington; Vancouver, September, October.

The types of the above names are in the British Museum. Mr. Butler has referred them all as synonyms of *Celæna egens*; but *egens* is not a *Mamestra*, unfortunately; it is an *Hadena* allied in wing form to some of the smaller European forms. I have a specimen like Walker's type of *egens* from Colorado.

***M. spiculosa* Grt.**

1883. Grt., Can. Ent., XVI, 28, *Mamestra*.

HABITAT.—Arizona.

The type is in Mr. Neumøgen's collection.

***M. circumcincta* Smith.**

1891. Smith, Proc. U. S. Nat. Mus., XIV, 253, *Mamestra*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

M. olivacea* Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 143, *Mamestra*.

1875. Grt., Can. Ent., VII, 27, *Mamestra*.

1877. Grt., Bull. Geol. Surv., III, 797, *Mamestra*.

1887. Smith, Proc. U. S. Nat. Mus., X, 465, *Mamestra*.

comis Grt.

1877. Grt., Bull. Geol. Surv., III, 85, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., XIV, 254, pr. syn.

var. *obscurior* Smith.

1887. Smith, Proc. U. S. Nat. Mus., X, 465, *Mamestra*.

HABITAT.—Atlantic to Pacific through northern and middle United States; Colorado; July, August, September.

I do not know where the type of *olivacea* is. The type of *comis* is in the Edwards collection; that of *obscurior* is with Mrs. Fernald.

M. rectilinea* Smith.

1887. Smith, Proc. U. S. Nat. Mus., X, 465, *Mamestra*.

HABITAT.—New York; Colorado; California; Oregon; Vancouver.

The types are in the National Museum.

***M. vau-media* Smith.**1887. Smith, Proc. U. S. Nat. Mus., x, 466, *Mamestra*.**HABITAT.**—Colorado.

The type is with Mr. J. Doll.

***M. incurva* Smith.**1887. Smith, Proc. U. S. Nat. Mus., x, 466, *Mamestra*.**HABITAT.**—Colorado; Arizona; New Mexico.

The type is in Mr. Neumögen's collection.

M. 4-lineata* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 140, pl. 4, f. 15, *Mamestra*.**HABITAT.**—Arizona; California, February, March, April, June, August, October.

Types are in the British Museum and in the Edwards collection.

M. marinitincta* Harv.1875. Harv., Bull. Buff. Soc. Nat. Sci., ii, 273, *Mamestra*.1877. Harv., Bull. Buff. Soc. Nat. Sci., iii, 6, *Mamestra*.**HABITAT.**—Texas, October, November.

The type is in the British Museum and is the same species received by the National Museum from Belfrage under that name.

M. laudabilis* Gn.1852. Gn., Spec. Gen., Noct., ii, 30, pl. 8, f. 4, *Hecatera*.1857. Wlk., C. B. Mus., Het., xi, 511, *Hecatera*.1874. Grt., Proc. Bost. Soc. N. H., xvi, 241, *Mamestra*.1875. Grt., Can. Ent., vii, 27, *Mamestra*.
indicans Wlk.1856. Wlk., C. B. Mus., Het., x, 359, *Hapalia*.1868. G. & R., Trans. Am. Ent. Soc., ii, 78, pr. syn.
strigicollis Wallgr.1860. Wallgr., Wien. Ent. Monatschr., iv, 170, *Hecatera*.1891. Smith, Proc. U. S. Nat. Mus., xiv, 274, *Mamestra*.
var. *illaudabilis* Grt.*1875. Grt., Can. Ent., vii, 27, *Mamestra*.1881. Grt., Can. Ent., xiii, 129, *Mamestra*.**HABITAT.**—New Jersey; southward and westward to Florida, Texas and Colorado; California, April, August, September; Colorado in August.

Types of the Guenée, Grote, and Walker species are in the British Museum. I think there can be no reasonable doubt that Wallengren's species is the same.

M. alboguttata* Grt.1877. Grt., Bull. Buff. Soc. Nat. Sci., iii, 85, *Mamestra*.**HABITAT.**—New Mexico; Oregon; California.

The type is in the British Museum.

M. cuneata Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 139, pl. 4, f. 9, *Mamestra*.

1874. Grt., Can. Ent., VI, 156, *Mamestra*.

HABITAT.—California; Washington; Oregon, May and June; Vancouver; New York.

The type is in the British Museum.

M. sutrina Grt.

1881. Grt., Papilio, I, 5, *Mamestra*.

HABITAT.—Colorado.

The type is in the British Museum. This species was unknown to me when I wrote my revision of *Mamestra*. It resembles *lustralis* more than it does *cuneata*; but the male antennæ are simple. In its position next to *cuneata* its resemblance to *lustralis* will serve to differentiate it.

M. lorea Gn.*

1852. Gn., Spec. Gen., Noct., I, 126, *Hydræcia*.

1887. Wlk., C. B. Mus., Het., IX, 161, *Hydræcia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 13, *Mamestra*.

1879. Grt., Can. Ent., XI, 28, † *Graphiphora*.

ligata Wlk.

1860. Wlk., Can. Nat. & Geol., V, 253, *Hydræcia*.

1877. Grt., Can. Ent., IX, 28, pr. syn.

dodgei Grt.

1875. Grt., Can. Ent., VII, 90, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., XIV, 262, pr. syn.

HABITAT.—Canada; Eastern, Middle, and Central States to Nebraska, Colorado; June, July, August, September.

The type of *lorea* is in the British Museum. I have seen the type of *dodgei* in the Tepper collection. The type of *ligata* is in the collection of the Entomological Society of Ontario.

M. quadrannulata Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 430, *Mamestra*.

HABITAT.—Nebraska; Texas; Colorado.

The type is in the Tepper collection. A correctly determined specimen is in the British Museum.

M. erecta Wlk.*

1856. Wlk., C. B. Mus., Het., X, 264, *Celarna*.

1891. Butler, Entomologist, XXIV, 241, *Hecatera*.

constipata Wlk.

1857. Wlk., C. B. Mus., Het., IX, 743, † *Perigæa*.

1891. Butler, Entomologist, XXIV, 241, pr. syn.

inæza Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 123, *Perigrapha*.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 214, *Mamestra*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 309, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 263, pr. syn.

HABITAT.—Texas; "East Florida," March, April.

The types of all the names are in the British Museum. The locality "East Florida," is rather dubious, for I have not known of any such Texan species heretofore.

***M. longiclava* Smith.**

1891. Smith, Proc. U. S. Nat. Mus., xiv, 265, *Mamestra*.

HABITAT.—Colorado.

The type is with Mr. Neumægen.

M. anguina* Grt.

1881. Grt., Can. Ent., xiii, 129, *Mamestra*.

HABITAT.—Maine; New Jersey; Illinois; Nebraska; Colorado.

The type is in the British Museum.

M. vicina* Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 156, *Mamestra*.

1877. Grt., Can. Ent., ix, 197, *Mamestra*.

teligera Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 215, *Mamestra*.

1877. Grt., Can. Ent., ix, 197, † pr. syn.

1881. Grt., Can. Ent., xiii, 129, pr. syn.

acutipennis Grt.

1882. Grt., Can. Ent., xii, 214, *Mamestra*.

1883. Grt., Can. Ent., xiii, 129, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, 267, pr. syn.

HABITAT.—Maine to Texas, to California; June to October.

The types of *vicina* and *acutipennis* are in the British Museum; that of *teligera* is in the Museum of Comparative Zoölogy at Cambridge. The type of *acutipennis* is somewhat more than usually powdery; else I find no difference from *vicina*. The specimen is badly set, giving the wings a peculiarly pointed appearance, which apparently suggested Mr. Grote's name.

M. pensilis* Grt.

1874. Grt., Proc. Acad. Nat. Sci. Phil., 1874, 199, *Dianthaccia*.

1874. Grt., Can. Ent., vi, 215, *Dianthaccia*.

1881. Grt., Can. Ent., viii, 128, *Mamestra*.

HABITAT.—Texas; Colorado; California; Washington; Vancouver. August, September, October, November.

***M. ferrealis* Grt.**

1883. Grt., Can. Ent., xv, 29, *Mamestra*.

HABITAT.—Montana.

I have no idea where the type of this species could be found, and it is not recognized it as yet.

M. impolita Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 140, *Mamestra*.

HABITAT.—Quebec, Canada.

The species is unknown to me. It came from Prof. F. X. Belanger, Université Laval, and he may have the type.

M. subdita Mäeschl.

1860. Mäeschl., Wien. Ent. Monatschr., iv, 363, pl. 9, f. 7, *Dianthæcia*.

1864. Mäeschl., Wien. Ent. Monatschr., viii, 197, pl. 5, f. 15, *Dianthæcia*.

1881. Grt., Can. Ent., xiii, 130, *Mamestra*.

HABITAT.—Labrador.

I have seen the type. It is not really typical *Mamestra*; but I have no satisfactory place for it at present and leave it where it will be most naturally sought for.

Genus *SCOTOGRAMMA* Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 469.

A revision of the species of this genus, with descriptions of each, will be found in the Proc. U. S. Nat. Mus., xii, 461, 1889.

S. submarina Grt.*

1883. Grt., Can. Ent., xv, 4, *Anarta*.

1887. Smith, Proc. U. S. Nat. Mus., x, 469, *Scotogramma*.

HABITAT.—Arizona; Montana; Oregon.

The type is with Mr. Neumoegen.

S. phoca Moeschl.

1864. Moeschl., Wien. Ent. Monatschr., viii, 197, pl. 5, f. 15, *Dianthæcia*.

1881. Grt., Can. Ent., xiii, 130, *Mamestra*.

1887. Smith, Proc. U. S. Nat. Mus., x, 469, *Scotogramma*.

promula Morr.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., xi, 97, *Mamestra*.

1875. Grt., Can. Ent., vii, 22, *Anarta*.

1876. Grt., Stett. Ent. Zeit., xxxvii, 135, *Anarta*.

1881. Grt. Can. Ent., xiii, 127, *Anarta*.

1882. Smith, Bull. Bkln. Ent. Soc., v, 68, *Mamestra*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 463, pr. syn.

HABITAT.—Labrador; Colorado in July and August.

Mr. Morrison's type is in the Tepper collection. Mr. Moeschler had the kindness to send me a typical specimen some years ago, which enabled me to make the comparisons resulting in the above synonymy. Material is very scant in most of the species of this genus.

S. perplexa Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 469, *Scotogramma*.

HABITAT.—Colorado.

The type is in the Tepper collection.

S. inconcinna Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 469, *Scotogramma*.

HABITAT.—Colorado.

The type is in the National Museum.

S. umbrosa Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 470, *Scotogramma*.

HABITAT.—Arizona; Colorado.

Types are in the National Museum.

S. stretchii Hy. Edw.

1887. Hy. Edw., Can. Ent., xix, 146, *Scotogramma*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 464, *Scotogramma*.

HABITAT.—Colorado Desert.

The type is in the Edwards collection.

Genus ULOLONCHE Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 471.

A monographic treatment of the species will be found in the Proc. U. S. Nat. Mus., 1889, Vol. xii, 465. This paper is cited only to authenticate synonymy or generic reference.

U. niveiguttata Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 140, pl. 4, f. 16, *Mamestra*.

1887. Smith, Proc. U. S. Nat. Mus., x, 471, *Ulolonche*.

HABITAT.—California; Arizona.

The types are in the British Museum and in the Edwards collection.

U. fasciata Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 471, *Ulolonche*.

HABITAT.—New Mexico.

The type is in the National Museum.

U. disticha Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 217, *Caradrina*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 310, *Orthosia*.

1880. Grt., Bull. Bkln. Ent. Soc., iii, 37, *Orthosia*.

1891. Smith, List Lepidoptera, 42, *Ulolonche*.

HABITAT.—Colorado in June; Texas.

The type is in the Museum at Cambridge; another specimen, also marked "type," is in the British Museum. The species has distinct hairy eyes and is as little an *Orthosia* as it is a *Caradrina*.

U. modesta Morr.*

1874. Morr., Proc. Bost. Soc. N. H., xvii, 114, *Dianthacia*.

1879. Grt., Can. Ent., xi, 27, *Graphiphora*.

1881. Grt., Can. Ent., XIII, 126, *Taniocampa*.

1887. Smith, Proc. U. S. Nat. Mus., x, 471, *Ulolonche*.

HABITAT.—Canada; New England, Middle, and Central States, May, June, and July.

I have seen no specimens marked "type."

U. orbiculata Smith.*

1891. Smith, Proc. U. S. Nat. Mus., XIV, 266, *Mamestra*.

HABITAT.—Colorado.

The type is in the National Museum.

Genus **HADENA** Schrank.

1804. Schrank, Fauna Boica, II, 2, 158.

This genus will probably stand subdivision into several genera. Two rather well-marked groups, or subgenera, *Xylophasia* and *Luperina*, have been monographed by me in the Proc. U. S. Nat. Mus., 1890, Vol. XIII, pp. 407-447, and this paper is not cited save when necessary to authenticate a change. It is likely that, eventually, both of these subdivisions will take generic rank, and the term *Hadena* will probably be restricted to one of them. The species not included in the above revision are for the present placed into a section *Hadena* merely to separate them. As usual, unless otherwise stated, my identification of the species was correct.

§ **LUPERINA** Bdv.

1829. Bdv., Index Methodicus.

L. niveivenosa Grt.*

1879. Grt., Bull. Geol. Surv., v, 206, *Agrotis*.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 410, *Luperina*.

HABITAT.—Montana; Colorado.

The type is with Mr. Graef, and a considerable number of specimens indicate quite a variable species. Curiously enough I have never seen a male.

L. stipata Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 64, *Hadena*.

HABITAT.—Illinois; Massachusetts; Maine; Minnesota; Wisconsin; Colorado.

The type is in the Tepper collection.

L. passer Gn.*

1852. Gn., Spec. Gen., Noct., I, 195, *Mamestra*.

1856. Wlk., C. B. Mus., Het., IX, 231, *Mamestra*.

1879. Grt., Can. Ent., XI, 179, *Hadena*.

1882. Grt., New List, 27, *Luceria*.

incallida Wlk.

1856. Wlk., C. B. Mus., Het., x, 330, *Agrotis*.

1869. G. & R., Trans. Am. Ent. Soc., II, 78 = *Agrotis venerabilis*.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 377 = *Agrotis venerabilis*.
loculata Morr.
 1874. Morr., Bull. Buff. Soc. N. H., II, 110, *Luceria*.
 1879. Grt., Can. Ent., XI, 179, pr. syn.
viralis Grt.
 1880. Grt., Bull. Geol. Surv., VI, 260, *Agrotis*.
 1890. Smith, Bull. U. S. Nat. Mus., No. 38, 207, *Agrotis*.
var. conspicua Morr.
 1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 110, *Luceria*.

HABITAT.—Canada, June and July; Massachusetts, June and July; Connecticut; New York, July, August, and September; Illinois, October; Colorado; Oregon.

The types of *passer*, *incallida*, and *viralis* are in the British Museum; those of *loculata* and *conspicua* are in the Tepper collection; a specimen of *loculata* also marked "type" is in the British Museum. Mr. Walker's type is a badly rubbed specimen, undoubtedly the same as *passer*. I can not understand how both Mr. Grote and Mr. Butler could see any resemblance to *venerabilis*, and at all events the structural characters should have prevented the reference. Mr. Grote's type of *viralis* is a badly faded and discolored specimen, also without doubt the same as *passer*. In the Cambridge Museum is a specimen of this same species marked "*Hadena destructor* Peck," in Mr. Grote's handwriting.

L. burgessii Morr.

1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 109, *Luceria*.
 1875. Grt., Check List, Noct., *Hadena*.
 1880. Grt., Bull. Bkln. Ent. Soc., III, 36, *Hadena*.
 1882. Grt., New List, 27, *Luceria*.
discors Grt.
 1881. Grt., Trans. Kans. Ac. Sci., VII, 65, *Hadena*.
 1890. Smith, Proc. U. S. Nat. Mus., XIII, 412, pr. syn.

HABITAT.—Massachusetts; Arizona; Nebraska.

The type of Mr. Morrison's species is in Mr. Tepper's collection.

L. longula Grt.*

1879. Grt., Bull. Geol. Surv., V, 204, *Hadena*.

HABITAT.—New Mexico; Colorado; Nevada; Kansas; Washington. Mr. Grote's type is in the British Museum.

§ **XYLOPHASIA** Steph.

1829. Steph., Ill. Br. Ent., Haust., II, 174.

X. remissa Hbn.*

1812. Hbn., Samml. Eur. Schmett., Noct., 423, *Noctua*.
 1816. Hbn., Verzeichniss, 219, *Astrapetis*.
 1852. Gn., Spec. Gen., Noct., I, 208, an *var. gemina*.
indocilis Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 178, *Xylophasia*.

1882. Grt., Ill. Essay, 44, pr. syn.

1889. Butler, Trans. Ent. Soc. Lond., 1889, 386, pr. syn.

HABITAT.—Middle and Eastern States; North Carolina; New York in June.

Walker's type is in the British Museum, and is this species of Hübner's.

X. *separans* Grt.

1880. Grt., Bull. U. S. Geol. Surv., VI, 260, *Hadena*.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 425 = *ducta*.

HABITAT.—New York in June and July; Wisconsin.

The type is in the British Museum. I find I had entirely mistaken this species. It has nothing to do at all with *ducta* nor with the *devastatrix* group, in fact, but belongs with the *vultuosa* series. It is a very close ally in maculation to *remissa*, or yet nearer to the European *gemina*, but much darker and with all the pale markings wanting. The W. mark in the s. t. line is distinct, the orbicular oblique, and there is a broad dash between the ordinary lines. I can not at present remember where I obtained the specimens marked *separans*, which led to my erroneous reference.

X. *suffusca* Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 61, *Hadena*.

1877. Grt., Can. Ent., IX, 29 = *Agrotis illata*.

illata † Grt.

1876. Grt., Can. Ent., VIII, 29, *Hadena*.

1877. Grt., Can. Ent., IX, 29, *Hadena*.

HABITAT.—Canada to Texas; Colorado, August; New York, May, June, July, September; Massachusetts in August.

Mr. Grote has referred this species, the type of which is in the Tupper collection, to *illata* Wlk.; but that species is really an *Agrotid*, as described by Mr. Walker, and is the *cinereomaculata* form of *turris*. There is a vague sort of resemblance between the species, but an examination of the generic characters should have prevented the reference.

X. *apamiformis* Gn.*

1852. Gn., Spec. Gen., Noct., I, 137, *Xylophasia*.

1856. Wlk., C. B. Mus., Het., IX, 176, *Xylophasia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.
contenta Wlk.

1857. Wlk., C. B. Mus., Het., XI, 754, *Hadena*.

1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.

HABITAT.—Canada, June and August; New York, June, July, and August; New Jersey; Pennsylvania; Illinois; Colorado; District of Columbia, in June.

Both the Guenée and the Walker types are in the British Museum.

X. vultuosa Grt.*

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 420, *Hadena*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States; New York in May and June; Massachusetts in August.
The type is in the British Museum.

X. exornata Moeschl.

1864. Moeschl., Wien. Ent. Monatschr., iv, 364, pl. 9, f. 5, *Hadena*.

1867. Pack., Proc. Bost. Soc. N. H., xi, 39, *Hadena*.

HABITAT.—Labrador; Colorado, Glenwood Springs, August.

I have seen a typical specimen from Mr. Moeschler. In the British Museum there are two specimens erroneously named; but one from the Grote collection is correctly determined.

H. morna Strk.*

1879. Strk., Rept. Chief Eng., 1878-'79, v. v, p. 1861, *Hadena*.

1890. Smith, Proc. U. S. Nat. Mus., xiii, 422, *Xylophasia*.

HABITAT.—"Rio Blanco"; Colorado.

The type is in Mr. Strecker's collection.

I have identified this species in Mr. Bruce's material, and find it best position here.

X. hulstii Grt.*

1880. Grt., No. Am. Ent., i, 93, *Hadena*.

HABITAT.—Colorado.

The type is in the Graef collection. Mr. Bruce has, during 1891 taken the species in small numbers.

X. finitima Gn.*

1852. Gn., Spec. Gen., Noct., i, 206, *Apamea*.

1856. Wlk., C. B. Mus., Het., ix, 250, *Apamea*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 150, an var. *basilinea*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 9, an var. *basilinea*.

1882. Grt., New List, 1882, 27, *Hadena*.

HABITAT.—Canada; Northern, Middle, and Eastern States in May and June; Colorado; Oregon, May.

The type is in the British Museum.

X. lateritia Hfn.*

1767. Hfn., Berlin. Mag., iii, 306, *Noctua*.

1776. Rott., Naturf., ix, 127, *Noctua*.

1816. Hbn., Verzeichniss, 243, *Septis*.

1852. Gn., Spec. Gen., Noct., i, 137, *Xylophasia*.

1856. Wlk., C. B. Mus., Het., ix, 170, *Xylophasia*.

1874. Grt., Can. Ent., vi, 215, *Hadena*.

molochina Hbn.

1812. Hbn., Samml. Ex. Schmett. Noct., 74, *Noctua*.

1816. Hbn., Verzeichniss, 243, pr. syn.

obliquosa Wlk.

1858. Wlk., C. B. Mus., Het., xv, 1683, *Mamestra*.

1891. Smith, Proc. U. S. Nat. Mus., xiv, *Mamestra*.

HABITAT.—Europe; United States; Canada in July; New York, July and August; Colorado, October.

Walker's type is in the British Museum, and is what we know as *lateritia*. On the other hand, both *insignata* and *dubitans* Wlk., do not agree with *lateritia*, but are exactly the same as Mr. Grote's *sputatrix*. *Insignata* has been referred to both species at different times by Mr. Grote.

X. cogitata Smith.*

1890. Smith, Proc. U. S. Nat. Mus., xiii, 421, *Xylophasia*.

insignata || Wlk.

1860. Wlk., Can. Nat. and Geol., v, 254, *Apamea*.

HABITAT.—Sierra Nevada, California; Colorado, Manitou in June and September; Canada, in July; New Hampshire.

Types are in the National Museum, at Rutgers College and in the Neumægen collection. The type of Walker's *insignata* described in the Can. Nat. and Geol., I owe to the courtesy of Mr. Moffat, curator for the Entomological Society of Ontario. It is a very poor specimen, but undoubtedly the species described by me. Fortunately Walker had preoccupied the name in 1857 for a closely allied species.

X. dubitans Wlk.*

1856. Wlk., C. B. Mus., Het., ix, 232, *Mamestra*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 108, *Hadena*.

1874. Grt., Can. Ent., vi, 215 = *lateritia*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 146, an var. *lateritia*.

insignata Wlk.

1857. Wlk., C. B. Mus., Het., xi, 729, *Apamea*.

1868. G. & R., Trans. Am. Ent. Soc., ii, 78 = *lateritia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 108 = *lateritia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 190, n. b. l.

sputatrix Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 190, *Hadena sputator*.

1875. Grt., Check List Noct., 9, *Hadena sputatrix*.

HABITAT.—Canada; Eastern, Northern, Central, and Middle States, July, August, September.

The types of all the names are in the British Museum, and the type of *dubitans* is undoubtedly the same as *sputatrix* and not like *lateritia*. The question of whether this *insignata* should be considered a *nomen bis lectum* need not be decided under the circumstances.

X. plutonia Grt.

1883. Grt., Can. Ent., xv, 9, *Hadena*.

HABITAT.—Maine; Wisconsin.

The type is in Dr. Thaxter's collection. The *plutonia* of the British Museum collection is an *Agrotis pastoralis*.

X. alticola Smith.1890. Grt., Proc. U. S. Nat. Mus., XIII, 423, *Xylophasia*.

HABITAT.—Gibson Mountains, Colorado, 12,500 feet.

The type is in the National Museum.

X. ducta Grt.*1878. Grt., Bull. Geol. Surv., IV, 176, *Hadena*.

HABITAT.—Maine; Canada; New York; Washington.

The type is in the British Museum, and is the species I know as such. Dr. Bethune sent me a specimen marked *insulsa* by Walker; but the type of *insulsa* is *Carneades campestris*.

X. impulsa Gn.*1852. Gn., Spec. Gen., Noct., I, 194, *Mamestra*.1856. Wlk., C. B. Mus., Het., IX, 231, *Mamestra*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 108, *Hadena*.var. *mixta* Grt.1880. Grt., Bull. Geol. Surv., VI, 264, *Hadena*.

HABITAT.—Canada in July and August. Eastern and Middle States in June and July; Texas.

Mr. Grote's types are in the British Museum. The variety *mixta* has the reniform somewhat pale marked, and the specimen is a little rubbed so as to show a yellowish ground. Else it does not differ from the type form.

X. devastatrix Brace.*1819. Brace, Am. Journ. Sci., I, 154, *Phalæna*.1856. Fitch, Rept. Ins., N. Y., 315, pl. 3, f. 2, *Agrotis*.1862. Harris, Inj. Ins., Flint ed., 445, *Agrotis*.1869. Riley, 1st Rept. Ins. Mo., 83, *Agrotis*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 108, *Hadena*.1875. Speyer, Stett. Ent. Zeit., XXXVI, 147, *Hadena*.1878. Grt., Bull. Geol. Surv., IV, 178, *Hadena*.1881. Riley, Index and Suppl. to Mo. Repts., 56, *Hadena*.1883. Saund., Fruit Insects, 329, f. 341, 342, *Hadena*.*abjecta* var. † Gn.1852. Gn., Spec. Gen., Noct., I, 194, *Mamestra*.1875. Speyer, Stett. Ent. Zeit., XXXVI, 147, *Hadena*.*ordinaria* Wlk.1856. Wlk., C. B. Mus., Het., IX, 232, *Mamestra*.

1868. G. and R., Trans. Am. Ent. Soc., II, 77, pr. syn.

1882. Grt., Ill. Essay, 43, pr. syn.

contenta Wlk.1856. Wlk., C. B. Mus., Het., IX, 233, *Mamestra*.

1882. Grt., Ill. Essay, 43, pr. syn.

marshallana Westw.1857. Humph., British Moths, I, 122, *Agrotis*.1858. Wlk., C. B. Mus., Het., XIV, 1698 = *contenta*.

HABITAT.—United States and Canada, June to September.

Walker's types are in the British Museum and have been correctly referred by Mr. Grote. The reference to *marshallana* is after Walker.

The economic literature of the species is large, and is given in great part by Mr. Edwards in his catalogue of early stages.

X. exuljs Lef.*

1836. Lef., Ann. Soc. Ent. Fr., v, 393, pl. 10, f. 2, *Hadena*.
 1852. Gn., Spec. Gen., Noct., 1, 185, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 220, *Crymodes*.
gelata Lef.
 1836. Lef., Ann. Soc. Ent. Fr., v, 393, pl. 10, f. 3, *Hadena*.
 1852. Gn., Spec. Gen., Noct., 1, 185, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 220, *Crymodes*.
grænlantica Zett.
 1839. Zett., Ins. Lapp., 939, *Hadena*.
 1845. H. Sch., Schmiett. Eur., II, 274, 284, pl. 31, *Polia*.
 1852. Gn., Spec. Gen., Noct., 1, 185, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 219, *Crymodes*.
marmorata Zett.
 1839. Zett., Ins. Lapp., 937, *Hadena*.
 1845. H. Sch., Schmiett. Eur., II, pl. 451, *Polia*.
 1856. Wlk., C. B. Mus., Het., ix, 220 = *poli*.
diffusa Geyer.
 1837. Geyer, Zutr. Hbn. Samml. Ex., 9, ff., 821, 822, *Exarnia*.
 1871. Staud., Cat. Lep., 100 = *exuljs*.
 1881. Grt., Can. Ent., XIII, 91, = *exuljs*.
gelida Gn.
 1852. Gn., Spec. Gen., Noct., 1, 186, pl. IV, f. 7, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 221, *Crymodes*.
poli Gn.
 1852. Gn., Spec. Gen., Noct., 1, 187, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 220, *Crymodes*.
borea Gn.
 1852. Gn., Spec. Gen., Noct., 1, 186, *Crymodes*.

HABITAT.—Labrador; Greenland; Iceland.

The synonymy is from Staudinger in great part, and his catalogue should be consulted for references to European literature. In the Jardin des Plantes at Paris is a long series of specimens separated out by Guenée and containing types of his names. They all refer to one species.

X. sommeri Lef.

1836. Lef., Ann. Soc. Ent. Fr., III, 391, pl. 10, f. 1, *Hadena*.
 1852. Gn., Spec. Gen., Noct., 1, 187, *Crymodes*.
 1856. Wlk., C. B. Mus., Het., ix, 220, *Crymodes*.

HABITAT.—Labrador; Greenland; Iceland.

Mr. Mœschler kindly sent me a specimen for study years ago, and I have seen none since.

X. arotica Bdv.*

1840. Bdv., Gen. et Ind. Meth., 120, *Hadena*.
 1845. H. Sch., Schmiett. Eur., II, 272, pl. 31, f. 155, *Polia*.
 1852. Gn., Spec. Gen., Noct., 1, 193, *Mamestra*.
 1856. Wlk., C. B. Mus., Het., ix, 225, *Mamestra*.
 1869. Minot, Can. Ent., II, 28, *Mamestra*.

1870. Saund., Can. Ent., II, 75, *Mamestra*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 14, *Hadena*.
amputatrix Fitch.
 1856. Fitch, 3d Rept. Ins. N. Y., 425, *Hadena*.
 1869. Riley, 1st Rept. Ins. Mo., 87, *Hadena*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 108, pr. syn.
amica† Harr.
 1862. Harr., Inj. Ins., Flint ed., 450, f. 222, *Hadena*.
 1873. Grt., Proc. Bost. Soc. N. H., XVI, 241, pr. syn.

HABITAT.—United States east of the Rocky Mountains; New Mexico, Colorado, June to September.

X. albina Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 157, *Hadena*.
 1881. Grt., Bull. U. S. Geol. Surv., VI, 263, as var. *castanea*.

HABITAT.—California.

The "type" is in the British Museum; but I am not sure it is a representative of the species Mr. Grote meant to describe. It seems to be really a form of *castanea*, as Mr. Grote suggested; but the specimen in the Tepper collections, also marked "type" by Mr. Grote, is more nearly allied to *arctica*, and is a good species as shown in my Revision. I prefer still to consider the form described by me as the species intended by Mr. Grote, the more so as I could not by comparison of the sexual characters of the British Museum "type" decide the question positively.

X. pluviosa Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 725, *Eurois*.
castanea Grt.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 156, *Hadena*.
cymosa Grt.
 1881. Grt., Papilio, I, 34, *Hadena*.
 1881. Grt., Papilio, I, 59 = *castanea*.
 1881. Grt., Bull. Geol. Surv., VI, 263 = *castanea*.

HABITAT.—California in April and May; Washington; Vancouver. The types of all the names are in the British Museum. Mr. Walker's *pluviosa* is exactly like *castanea*. Another "type" of *castanea* is in the Tepper collection.

X. occidentis Grt.*

1878. Grt., Bull. U. S. Geol. Surv., IV, 177, *Hadena*.

HABITAT.—Nevada; Colorado, August; Sierra Nevada, California. The type is in the British Museum.

X. perpensa Grt.

1883. Grt., Can. Ent., XIII, 229, *Hadena*.

HABITAT.—Arizona; New Mexico.

The type is in Mr. Neunmøgen's collection.

X. cuculliformis Grt.

1875. Grt., Check List Noct., 24, *Hadena*.

HABITAT.—California.

The type is in the British Museum.

X. verbascoides Gn.*

1852. Gn., Spec. Gen., Noct., I, 141, *Xylophasia*.

1856. Wlk., C. B. Mus., Het., IX, 177, *Xylophasia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.

HABITAT.—Middle, Eastern, and Central States, June and July.

The type is in the British Museum.

X. nigrrior Smith.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 437, *Xylophasia*.

HABITAT.—Maine.

The type is with Dr. Thaxter.

X. cariosa Gn.*

1852. Gn., Spec. Gen., Noct., I, 144, *Xylophasia*.

1856. Wlk., C. B. Mus., Het., IX, 178, *Xylophasia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.

1874. Grt., Can. Ent., VI, 15, *Hadena*.

idonea Grt.

1882. Grt., Can. Ent., XIV, 18, *Hadena*.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 438, *Xylophasia*.

HABITAT.—Maine to Texas; Wisconsin; Arizona; Northern States, June and July.

The types of both names are in the British Museum, and are undoubtedly the same species, much to my surprise. The *cariosa* type is a dark form of what I have always labeled with the same name; but the *cariosa* of the Grote collection is what I have supposed was *idonea*. I am the more surprised at this as my original knowledge of Guenée's species was based upon specimens labeled by Mr. Grote. I had supposed *idonea* to be the western representative of *cariosa*. I find now that there are probably two species covering the same range. Mr. Grote seems to have realized the same fact; but in separating them he unfortunately selected as type exactly the same form described by Guenée. The matter needs further study. I had no males of "*idonea*" before me when I wrote, and therefore can not be sure that the characters given by me authorize a new specific name.

X. vulgaris G. & R.*

1863. G. & R., Proc. Ent. Soc. Phila., VI, 19, pl. 3. f. 2, *Xylophasia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 110, *Hadena*.

1874. Grt., 6th Rept. Peab. Ac. Sci., 32, = *Xylina socia*.

HABITAT.—Middle and Eastern States; District of Columbia, May, June, and July.

A specimen marked "type," by Mr. Grote, is in the British Museum.

X. cristata Grt.

1878. Grt., Bull. Geol. Surv., IV, 176, *Hadena*.

HABITAT.—Buffalo, New York.

The type is in the British Museum. It is a *vulgaris* of large size and with a reddish-yellow suffusion. It may be a good species, but more probably an aberration. It will need a large material from the locality to decide.

X. antennata Smith.*

1890. Smith, Proc. U. S. Nat. Mus., XIII, 439, *Xylophasia*.

HABITAT.—California.

The type is in the National Museum.

X. relectina Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 216, *Hadena*.

1882. Grt., New List, 27, *Luceria*.

HABITAT.—Texas; Glenwood Springs, Colorado, in October.

The type is in the Museum of Comparative Zoölogy at Cambridge.

X. cinefacta Grt.

1881. Grt., Papilio, I, 77, *Hadena*.

HABITAT.—Washington; California; Colorado.

The types are in the British Museum and in the Edwards collection.

X. centralis Smith.*

1890. Smith, Proc. U. S. Nat. Mus., XIII, 441, *Xylophasia*.

HABITAT.—Sierra Nevada, California.

Types are in the National Museum and in the Edwards collection.

X. auranticolor Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.

HABITAT.—Colorado; New Mexico; Washington, July 10, 8,000 feet; Oregon, May and June; Arizona; Nebraska, in August.

A specimen, not marked "type," is in the British Museum.

X. lignicolor Gn.

1852. Gn., Spec. Gen., Noct., I, 140, *Xylophasia*.

1856. Wlk., C. B. Mus., Het., IX, 176, *Xylophasia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 149, *Hadena*.

1879. Strk., Rept. Chief Eng., 1878-79, v, 1861, *Hadena*.
var. *quæsitæ* Grt.

1876. Grt., Can. Ent., VIII, 26, *Hadenc*.

1877. Grt., Can. Ent., IX, 197, pr. syn.

HABITAT.—Canada; Northern, Eastern, Middle, and Western States; Arizona; Colorado; Northern and Middle States, June, July, August.

The types of both species and variety are in the British Museum.

X. genialis Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 66, *Hadena*.

HABITAT.—California.

The type is in the British Museum.

X. inordinata Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 63, *Hadena*.

var. *montana* Smith.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 444, *Xylophasia*.

HABITAT.—Massachusetts, in June; Maine; Colorado.

Mr. Morrison's type is in the Tepper collection, and is from the east; my type is in the National Museum, and is from Colorado.

X. semilunata Grt.*

1881. Grt., Papilio, I, 58, *Hadena*.

HABITAT.—Washington; Colorado.

The type is in the British Museum.

‡ **HADENA** Schrank.

The groupings are only approximate, and the sequence of species is very defective.

H. evelina French.*

1888. French, Can. Ent., XX, 71, *Hadena*.

HABITAT.—California, Truckee, Shasta County, Sierra Nevada, in September; Glenwood Springs, Colorado, October.

The type is with Prof. French, who has kindly sent me a duplicate.

H. bridghami G. & R.*

1866. G. & R., Proc. Ent. Soc. Phil., VI, 17, pl. 3, f. 1, *Mamestra*.

1873. Grt., Bull. Buff. Nat. Sci., I, 108, *Hadena*.

HABITAT.—Eastern States; Massachusetts, in July.

A specimen labeled by Mr. Grote, but apparently not the type, is in the British Museum. I have no idea where the type is; but as the species is so very distinct and generally known, it is not a matter of serious importance.

H. transfrons Neum.

1883. Neum., Papilio, III, 139, *Hadena*.

HABITAT.—British Columbia.

The type is in Mr. Neumægen's collection.

H. violacea Grt.

1881. Grt., Bull. Geol. Surv., VI, 261, *Hadena*.

HABITAT.—California, Shasta County, Sierra Nevada; Colorado, in October.

The types are in the British Museum and in the Edwards collection.

H. leucoscelis Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 26, *Polia*.1875. Grt., Check List Noct., 9, *Hadena*.*fibulata* Morr.1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 112, *Dryobola*.1875. Morr., Can. Ent., VII, 216, *Hadena*.

1875. Grt., Check List Noct., 9, pr. syn.

1880. Grt., Bull. Geol. Surv., VI, 265, pr. syn.

HABITAT.—Canada; Maine; Massachusetts, in July; Northern New York, in August; Wisconsin; Colorado.

Mr. Grote's type is in the British Museum. I have seen Mr. Morrison's type in some collection, and it is this species.

H. claudens Wlk.*1857. Wlk., C. B. Mus., Het., XI, 753, *Hadena*.*hillii* Grt.1876. Grt., Ann. Lyc. Nat. Hist. N. Y., XI, 305, *Hadena*.

HABITAT.—New Foundland; Northern and Eastern States; Lewis County, New York, July.

Walker's type is in the British Museum, in which is also a specimen of Mr. Grote's species. The two names refer to the same form; Mr. Grote's type is in the Hill collection.

H. adnixa Grt.1880. Grt., Can. Ent., XII, 243, *Hadena*.**HABITAT.**—Nevada.

Types are in the British Museum and in the Tepper collection.

H. paviae Behr.*1874. Behr, in Strk. Lep. Rhop. et Het., 94, *Tæniocampa*.1881. Grt., Bull. Geol. Surv., VI, 266 = *curvata*.**HABITAT.**—California.

Types are in Dr. Strecker's collection. In the British Museum two specimens received from Mr. Hy. Edwards and labeled by him *Dryobola paviae* Behr. They look like an evenly colored *curvata*, without contrasts of color. I believe the species to be a good one, and have named it *inconspicua* in the National Museum and in Mr. Edwards' collection. The name has not been sanctioned by description; but it appears in my List of Lepidoptera, No. 2034.

H. binotata Wlk.*1865. Wlk., C. B. Mus., Het., XXXII, 663, *Mamestra*.1882. Grt., Ill. Essay, 43, *Hadena*.*curvata* Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 157, *Hadena*.

1882. Grt., Ill. Essay, 43, pr. syn.

detorsa Wlk.*extersa* Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 728, *Hadena*.

HABITAT.—California; Washington; Vancouver.

The types of all these names are in the British Museum, and all refer to the same species. I can find no description of *detersa* Wlk., and it is possible that this is a *lapsus calami* for *extersa*.

H. genetrix Grt.

1878. Grt., Can. Ent., x, 237, *Hadena*.

HABITAT.—Nevada; Colorado.

The type is in the British Museum, and resembles a powdery *binotata* with all the maculation obscure.

H. characta Grt.*

1880. Grt., Can. Ent., xii, 243, *Hadena*.

1881. Grt., Bull. Geol. Surv., vi, 261, *Hadena*.

HABITAT.—Nevada; Arizona.

The type is in the British Museum; another typical specimen is in the Tepper collection, whence the type was received.

H. fumosa Grt.*

1879. Grt., Bull. Geol. Surv., v, 205, *Hadena*.

HABITAT.—Colorado; Washington.

The type is in the British Museum. I have a specimen compared with it.

H. indirecta Grt.*

1875. Grt., Can. Ent., vii, 28, *Hadena*.

HABITAT.—Colorado; California; Utah; Washington; Vancouver; British Columbia.

The type is in the British Museum.

H. divesta Grt.*

1874. Grt., Can. Ent., vi, 215, *Hadena*.

1875. Grt., Can. Ent., vii, 28, *Hadena*.

HABITAT.—Colorado; California; Washington; Vancouver, August.

The type is in the British Museum.

H. tusa Grt.

1878. Grt., Bull. Geol. Surv., iv, 177, *Hadena*.

HABITAT.—California.

The type is in the British Museum. It is a somewhat peculiar, broad-winged species, with prominent tuftings, and has a vague resemblance to *Euplexia*. The hind angles of the primaries are retracted, the margins of secondaries even.

H. tonsa Grt.

1880. Grt., Can. Ent., xii, 214, *Hadena*.

HABITAT.—Nevada.

The type is in the British Museum. It is a small, frail species, of the size of *modiola*, of which it is an ally. It is much more powdery and more ashen gray.

H. semicana Wlk.1865. Wlk., C. B. Mus., Het., xxxii, 675, *Miana*.*latireptana* Wlk.1865. Wlk., C. B. Mus., Het., xxxiii, 791, † *Erastria*.*modiola* Grt.1879. Grt., Bull. Geol. Surv., v, 204, *Hadena*.

HABITAT.—Wisconsin; "North America"; Colorado.

The types of the Walker and Grote names are in the British Museum, and all refer to the same species. Mr. Grote first compared his species to *modica* and afterward placed it next to *fractilinea*, of which I placed it as a variety in my list. It resembles exactly that species with all the red taken out. I have separated it here tentatively and for convenience in giving the synonymy.

H. fractilinea Grt.*1874. Grt., Can. Ent., vi, 15, *Hadena*.*vulniraga* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 144, *Hadena*.

HABITAT.—Canada, in August; New York, in August; Illinois; Vermont; Wisconsin; Nebraska; Colorado; New Mexico.

Mr. Morrison's type is in the Tepper collection. Mr. Grote's type have not seen. It does not seem to be in the British Museum, but may have overlooked it. I have, however, seen a number of specimens named by Mr. Grote, and there is no doubt that Mr. Morrison's specimen is the same.

H. misera Grt.*1881. Grt., Bull. Geol. Surv., vi, 582, *Hadena*.

HABITAT.—Illinois; New York, in August; Wisconsin.

The type is with Mr. Neumoegen.

H. egens Wlk.1856. Wlk., C. B. Mus., Het., x, 263, *Celana*.1882. Grt., Ill. Essay, 45, *Celana*.1889. Butler, Trans. Ent. Soc. Lond., 386 = *Mamestra ferrea*.

HABITAT.—Hudson Bay Territory; Colorado.

Mr. Butler is in error in referring this species to *Mamestra strigosa* Wlk., = *ferrea* Grt. It is not a *Mamestra* at all, but a *Hadena*, and the type, though a poor specimen and badly rubbed, is like an insect I have had from Colorado, collected by Bruce. It is a good species.

H. minuscula Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 147, *Orthosia*.1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 425, *Parastichtis*.1875. Grt., Can. Ent., vii, pl. i. f. 3, *Parastichtis*.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 431, *Hadena*.

HABITAT.—Canada, in September; Massachusetts, in August and September; Maine; New Hampshire.

The type is in the Tepper collection.

H. marina Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 67, *Hadena*.

HABITAT.—California.

The type is in the British Museum. It is a smaller, narrower winged form, but with all the maculation much as in *miseloides*.

H. miseloides Gn.*

1852. Gn., Sp. Gen., Noct., II, 89, *Hadena*.

1853. H. Sch., Ex. Schmett., 212, *Hadena*.

1857. Wlk., C. B. Mus., Het., XI, 582, *Hadena*.

HABITAT.—United States, east of the Rocky Mountains; New York, in July; District of Columbia, in August; Texas, May and September. The type is in the British Museum.

H. ohlorostigma Harv.

1876. Harv., Can. Ent., VIII, 53, *Hadena*.

HABITAT.—Texas, May 22; Illinois.

The type is in the British Museum. It is yet smaller than *marina*, the reniform green; orbicular small and round; the lines white marked.

H. smaragdina Neum.

1883. Neum., Papilio, III, 140, *Hadena*.

HABITAT.—Southwest Arizona.

The type is in the Neumœgen collection.

H. mactata Gn.*

1852. Gn., Spec. Gen., Noct., I, 207, *Apamea*.

1856. Wlk., C. B. Mus., Het., IX, 250, *Apamea*.

1874. Grt., Trans. Am. Ent. Soc., V, 91, *Hadena*.

HABITAT.—Canada, July, August, and September; Northern, Eastern, and Middle States, same dates; Colorado.

The type is in the British Museum.

H. turbulenta Hbn.*

1820. Hbn., Zutrüge, pl. 15, ff. 67, 68, *Phosphila*.

1857. Wlk., C. B. Mus., Het., XIII, 1018, *Amphipyra*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 180, *Hadena*.

1888. Beutenmüller, Can. Ent., XX, 136, larva.

1892. Edw. and Elliott, Bull. Am. Mus., N. H., IV, 77, larval habits.

arcuata Wlk.

1857. Wlk., C. B. Mus., Het., XI, 718, *Xylophasia*.

HABITAT.—New York, southward; Delaware in May; Georgia; Florida; Middle States, August and September.

Walker's type in the British Museum is an unusually large specimen of Hübner's species.

H. modica* Gn.

1852. Gn., Spec. Gen., Noct., I, 207, *Apamea*.
 1856. Wlk., C. B. Mus., Het., ix, 250, *Apamea*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 15, *Hadena*,
subcedens Wlk.
 1856. Wlk., C. B. Mus., Het., x, 264, *Celena*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.
 1889. Butler, Trans. Ent. Soc. Lond., 1889, 386, pr. syn.

HABITAT.—Canada; Eastern, Middle, and Central States, July September; Colorado.

Guenée's type is probably in the Oberthür collection. Walker's of course, in the British Museum.

***H. hausta* Grt.**

1882. Grt., Can. Ent., XIV, 217, *Hadena*.

HABITAT.—Kittery Point, Maine; Northern New York; New Mexico. The type is in Dr. Thaxter's collection.

H. cylindrica* Grt.

1880. Grt., Can. Ent., XII, 214, *Hadena*.

HABITAT.—Nevada.

The type is in the British Museum. It is a fragile thing, with slight body and large wings. Mr. Butler has placed it under *Bryophila*. It is more like Mr. Grote's *Hadenella*.

H. patina* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 7, *Hadena*.

HABITAT.—Texas, March and April; District of Columbia, August and September.

The type is in the British Museum, and is like the specimens from the Belfrage collection in the National Museum.

H. diversicolor* Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 132, *Demas*.
 1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 419, *Hadena*.
 1876. Grt., Stett. Ent. Zeit., XXXVII, 136, *Hadena*.
 1880. Grt., Bull. Bkln. Ent. Soc., III, 37, *Hadena*.

HABITAT.—Massachusetts, August and September; New York, New Hampshire.

The type is in the Tepper collection; another specimen in the British Museum is also marked "type."

***H. tortilis* Grt.**

1880. Grt., Bull. Bkln. Ent. Soc., III, 46, *Hadena*.

HABITAT.—Washington.

The type is in the Tepper collection.

H. chryselectra* Grt.

1880. Grt., Can. Ent., xii, 244, *Hadena*.

HABITAT.—Colorado.

The type is in the Neumœgen collection.

Genus **HILLIA** Grt.

1883. Grt., Proc. Am. Phil. Soc., xxi, 168.

H. crasis* H. Sch.

1845. H. Sch., Schmett. Eur., ii, 361, Noct., pl. 28, f. 139, *Noctua*.

1883. Moeschl., Stett. Ent. Zeit., xliiv, 117, *Orthostia*.

1891. Butler, Entomologist, xxiv, 241, f. *Anomogyna*.

erdmani Moeschl.

1874. Moeschl., Stett. Ent. Zeit., xxv, 158, *Agrotis*.

1883. Moeschl., Stett. Ent. Zeit., xliiv, 117, pr. syn.

semisigna Wlk.

1857. Wlk., C. B. Mus., Het., xi, 748, f. *Orthostia*.

1891. Butler, Entomologist, xxiv, 241, f. pr. syn.

senescens Grt.

1878. Grt., Can. Ent., x, 235, *Hadena*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 168, *Hillia*.

1891. Butler, Entomologist, iv, 241 = *semisigna*.

vigilans Grt.

1878. Grt., Bull. Geol. Surv., iv, 178, *Hadena*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 168, *Hillia*.

HABITAT.—Colorado; Lewis County, New York, in September; Orono, Maine; Ontario; Labrador; Lapland; Sweden.

I have seen the types of *vigilans*, *senescens*, and *semisigna* in the British Museum. Mr. Butler refers *semisigna* Wlk., to *senescens*; but in my notes I have referred it to *vigilans*, I think more correctly. The specimens of *crasis* in the museum left me in doubt as to the synonymy; but this doubt was removed by the specimens in the museum at Berlin. Mr. Moeschler long ago sent me a specimen of his *erdmani*, labeled = *crasis*. We have here a decidedly variable species, the gray form being *senescens* Grt., and the *crasis* of the Berlin Museum. The reddish form is *vigilans* Grt., and *erdmani* Moeschl., with *semisigna* Wlk., somewhat intermediate but nearer to *vigilans*. In maculation the median lines vary in distinctness and the ordinary spots in the amount of black surrounding them. The species is not common, and I think I have seen nearly all the specimens in the American collections.

H. algens* Grt.

1878. Grt., Can. Ent., x, 236, *Hadena*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 168, *Hillia*.

HABITAT.—Maine; northern New York; Colorado.

The type is in the British Museum. It is a poor specimen and Mr. Butler makes it a *Calathusasina*, placing it next to *Charadra*.

H. discinigra Wlk.

- 1856. Wlk., C. B. Mus., Het., ix, 27, *Bryophila*.
- 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 8, *Jaspidca*.
- 1882. Grt., Ill. Essay, 40, ?*Valeria*.

HABITAT.—Hudson Bay Territory.

The type in the British Museum is a poor, crushed female, closely allied to *algens*, but much darker basally. It is not impossible that it may prove a suffused form of Mr. Grote's species, but it will need more material than I have seen to decide. Mr. Butler places it in *Dicopis* evidently without reference to the essential characters of that genus.

Genus **TRACHEA** Hbn.
1816. Hbn., Verzeichniss, 219.

T. delicata Grt.*

- 1874. Grt., Trans. Am. Ent. Soc., v, 92, *Hadena*.
- 1890. Grt., Revised Check List, 20, *Trachea*.
interna Grt.
- 1875. Grt., Check List, Noct., 24, *Hadena*.
- 1876. Grt., Can. Ent., viii, 189, pr. syn.
- 1890. Grt., Revised Check List, 20, pr. var.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States.
The types are in the British Museum.

Genus **PSEUDANARTA** Hy. Edw.
1875. Proc. Cal. Ac. Sci., vi, 133.

A revision of the species of this genus will be found in the *Entomologica Americana*, v, 175, to which reference should be made for specific characters.

P. flava Grt.*

- 1874. Grt., Trans. Am. Ent. Soc., v, 91, *Hadena*.
- 1878. Grt., Bull. Geol. Surv., iv, 178, *Pseudanarta*.
crocea Hy. Edw.
- 1875. Hy. Edw., Proc. Cal. Ac. Nat. Sci., vi, 133, *Pseudanarta*.
- 1880. Grt., Bull. Geol. Surv., vi, 265, pr. var.
- 1881. Grt., Can. Ent., xii, 215, pr. var.
- 1889. Smith, Ent. Amer., v, 178, pr. syn.

HABITAT.—British Columbia; Oregon; Nevada; Colorado, August and September; Arizona.

Mr. Grote's type is in the British Museum; Mr. Edwards's species in his own collection.

P. singula Grt.*

- 1880. Grt., Can. Ent., xii, 215, *Pseudanarta*.

HABITAT.—Texas, in October; Arizona; Colorado in August.
The type is in the British Museum.

P. flavidens Grt.*

1879. Grt., Bull. Geol. Surv., v, 205, *Pseudanarta*.

HABITAT.—Colorado in September; New Mexico.

The type is in the British Museum.

. aurea Grt.

1879. Grt., Bull. Geol. Surv., v, 205, *Pseudanarta*.

1882. Grt., Can. Ent., XIV, 19, *Pseudanarta*.

1889. Smith, Ent. Amer., v, 177, *Pseudanarta*.

HABITAT.—Southern Texas.

The type is in the British Museum and is a Heliothid, I think. It most resembles *Melicleptria*, and has the anterior tibia armed with a claw. I could not decide positively from the specimen where it best belonged and leave the species in the present genus until more material is at hand. It was unknown to me in 1889.

P. falcata Neum.

1883. Neum., Papilio, III, 141, *Pseudanarta*.

1889. Smith, Ent. Amer., v, 176, *Pseudanarta*.

HABITAT.—Arizona, Fort Huachuca.

The type is in the Neumægen collection. I have had a recent chance to examine it, and find it a Heliothid, probably best referred to *Pseudanthracia*. The material is too scant for positive reference and I leave it here with the probabilities indicated.

Genus *OLIGIA* Hbn.

1816. Hbn., Verzeichniss. 404.

A revision of the species of this genus will be found in *Entomologica Americana*, 1889, v, 145. The separation of the species there accords with the types so far as I have seen them, except where otherwise mentioned.

O. festivoides Gn.*

1852. Gn., Spec. Gen., Noct., 1, 220, *Celæna*.

1856. Wlk., C. B. Mus., Het., x, 261, *Celæna*.

1881. Grt., Bull. Geol. Surv., v, 261, *Oligia*.

varia Wlk.

1857. Wlk., C. B. Mus., Het., XII, 808, *Erastria*.

cephalica Grt. MSS.

1891. Butler, Entomologist, XXIV, 241, pr. syn.

HABITAT.—Canada to Florida to Texas, west to Nebraska; Texas in March, April, and August; New York in May.

All the types are in the British Museum. Mr. Grote's name was never published, and would not have been cited here, but for Mr. Butler's note. *Erastria varia* is a well-defined specimen of this species.

O. chalconia Hbn.*

1815. Hbn., Eur. Schmett., Noct., 404, *Oligia*.
 1816. Treit., Schmett. Eur., 1, 74, *Bryophila*.
 1852. Gn., Spec. Gen., Noct., 1, 221, *Celæna*.
 1856. Wlk., C. B. Mus., Het., x, 262, *Celæna*.
 1891. Butler, Entomologist, xxiv, 240, *Mamestra*.
vineta Wlk.
 1857. Wlk., C. B. Mus., Het., xii, 730, *Miana*.
 1882. Grt., Ill. Essay, 44, pr. syn.
 1891. Butler, Entomologist, xxiv, 240, pr. syn.
irresoluta Wlk. •
 1857. Wlk., C. B. Mus., Het., xii, 731, † *Celæna*.
 1882. Grt., Ill. Essay, 45, pr. syn.
 1891. Butler, Entomologist, xxiv, 240, pr. syn.
arna Gn.
 1852. Gn., Spec. Gen., Noct., 1, 222, *Celæna*.
 1856. Wlk., C. B. Mus., Het., x, 262, *Celæna*.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 7, *Oligia*.
 1889. Smith, Ent. Amer., v, 148, pr. syn.
tracta Grt.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 204, pr. var.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 7, pr. syn.
 1881. Grt., Bull. Geol. Surv., vi, 261, an var. pr.
 1889. Smith, Ent. Amer., v, 148, pr. syn.
 1891. Butler, Entomologist, xxiv, 240, pr. syn.

HABITAT.—Canada in June; New York in June; Maryland; Florida; Texas, March, April, and August; Colorado; New Mexico; Alabama in November.

The Walker and Grote types are in the British Museum; Guenée type is from the Doubleday material and should be there also; but I did not see it.

I can not quite see why Mr. Butler refers *chalconia* to *Mamestra* and *festivoides* to *Oligia*. The two are surely closely enough related to be congeneric.

O. versicolor Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 204, *Oligia*.
 1875. Grt., Can. Ent., vii, pl. 1, f. 11, *Oligia*.

HABITAT.—Ontario in June; northern New York.

The species is in the British Museum, but apparently not the type specimen. Mr. Van Duzee has sent me the species from Buffalo.

O. exesa Gn.*

1852. Gn., Spec. Gen., Noct., 1, 222, *Celæna*.
 1856. Wlk., C. B. Mus., Het., x, 262, *Celæna*.
 1881. Grt., Bull. Geol. Surv., vi, 265, *Oligia*.
floridiana Wlk.
 1865. Wlk., C. B. Mus., Het., xxxiii, 730, *Hadena*.
 1891. Butler, Entomologist, xxiv, 241, pr. syn.

HABITAT.—Florida in March.

The types are in the British Museum, and Mr. Butler's reference correct.

O. fuscimacula Grt.*

1881. Grt., Bull. Geol. Surv., VI, 262, 265, *Oligia*.

HABITAT.—Florida; Texas.

A "type" is in the British Museum; another in the Tepper collection.

O. grata Hbn.*

1819. Hbn., Zuträge, 16, f. 71, 72, *Elaphria*.

1816. Hbn., Verzeichniss, 230, *Elaphria*.

1856. Wlk., C. B. Mus., Het., x, 293, *Caradrina*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, *Caradrina*.
rassilis Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 158, *Hadena*.

1875. Grt., Can. Ent., VII, 58, pr. syn.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 211, pr. syn.

1880. Grt., Can. Ent., XII, 86, pr. syn.

1881. Grt., Bull. Geol. Surv., VI, 265, pr. syn.

HABITAT.—Maryland to Kansas to Florida to Texas, March to September in every month.

Types of Mr. Morrison's species are in the Tepper collection, and in the museum at Cambridge. The species is a common one locally in the Southern States.

O. nubicolora Gn.*

1852. Gn., Spec. Gen., Noct., I, 24, pl. 4, f. 9, *Monodes*.

1856. Wlk., C. B. Mus., Het., x, 284, *Monodes*.
unsignata Wlk.

1856. Wlk., C. B. Mus., Het., IX, 189, *Laphygma*.

1891. Butler, Entomologist, XXIV, 241, *Laphygma*.
paginata Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., XXVII, 64, *Hadena*.

1881. Grt., Bull. Geol. Surv., VI, 265, *Oligia*.
clara Harv.

1878. Harv., Can. Ent., x, 57, *Caradrina*.

HABITAT.—Florida; Texas.

Mr. Morrison's type is in the Tepper collection; the others are in the British Museum. Mr. Grote suggested very doubtfully that Guenée might have intended to describe *paginata*; but figure and description pointed to *Platysenta atriciliata* so decidedly that I felt justified in making the reference in my recent list. Mr. Butler suggested that *paginata* might be *unsignata* Wlk., if the former was correctly named in the Museum. Harvey's type of *clara* is a dull, dark specimen, but unquestionably the same species.

Genus *PERIGEA* Gn.

1852. Gn., Spec. Gen., Noct., I, 225.

The species of this genus must be studied in connection with material from the West Indian fauna before a stable nomenclature can be attained. There are either several species resembling each other very closely or there are some that are widely distributed and somewhat variable.

P. xanthioides* Gn.

1852. Gn., Spec. Gen., Noct., 1, 227, *Perigea*.
 1856. Wlk., C. B. Mus., Het., x, 271, *Perigea*.
 ab. *enixa* Grt.*
 1875. Grt., Bull. Buff. Soc. Nat. Sci., 11, 310, *Perigea*.
 1882. Grt., New List, 28, pr. var.
 1890. Grt., Revised Check List, 19, ab. pr.
 1892. Bent., Bull. Am. Mus. N. H., 1v, 69, larva.

HABITAT.—Canada; New York, southward to Florida; Northern States in March, June, and August; Texas in March, April, August.

Guenée's type is in the British Museum. Mr. Grote, Ill. Essay, 4, refers *P. mobilis* Wlk., C. B. M., Het., x, 277, as a synonym to this species, but I think incorrectly so. Walker's type is from the West Indies and differs quite evidently from our specimens. It may prove a geographical race eventually, but the material is not yet at hand to decide this positively. The type of *enixa* is also in the British Museum and without a large amount of material certainly looks like a distinct species.

***P. icole* Grt.**

1875. Grt., Proc. Bost. Soc. N. H., xviii, 414, *Perigea*.

HABITAT.—Florida.

The type is in the British Museum.

P. vecors* Gn.

1852. Gn., Spec. Gen., Noct., 1, 272, *Perigea*.
 1856. Wlk., C. B. Mus., Het., x, 272, *Perigea*.
 remissa Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 729, *Apamea*.
 1882. Grt., Ill. Essay, 45=*luza*.
 luza Grt.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., 11, 200, *Perigea*.

HABITAT.—New York in June and August; Massachusetts in July, southward to Florida and Texas; Colorado; District of Columbia in August.

The types of all the names are in the British Museum, and all refer to the same species. Mr. Grote's suggestion that Walker's name be abandoned because already used in an allied genus is settled by Guenée taking it. *Vecors* had not been identified heretofore.

P. epopea* Cram.

1782. Cram., Pap. Exot., iii, 144, pl. 272, G. & H., *Noctua*.
 1852. Gn., Spec. Gen., Noct., 1, 259, *Agrotis*.
 1856. Wlk., C. B. Mus., Het., x, 338, f. *Agrotis*.
 1883. Grt., Can. Ent., xv, 3, *Perigea*.
 infelix Gn.
 1852. Gn., Spec. Gen., Noct., 1, 229, *Perigea*.
 1856. Wlk., C. B. Mus., Het., x, 271, *Perigea*.
 1883. Grt., Can. Ent., xv, 3, pr. syn.
 palpalis Wlk.

1856. Wlk., C. B. Mus., Het., ix, 240, *Condica*.
 1882. Grt., Ill. Essay, 43, = *infelix*.
confederata Grt.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 143, *Hadena*.
 1882. Grt., Ill. Essay, 43, = *infelix*.

HABITAT.—Gulf States, extending northward along the coast, occasionally to Maine. New York in October; District of Columbia in September.

The types of all save Cramer's species are in the British Museum. There are more names which I am certain refer to this same form; but I have given above all from our own literature. Herrich-Schæffer and Gundlach both use Guenée's name in their works.

P. claufacta* Wlk.

1857. Wlk., C. B. Mus., Het., xi, 760, † *Xylina*.
commoda Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 760, *Xylina*.
fabrefacta Morr.
 1874. Morr., Proc., Bost. Soc. N. H., xvii, 146, *Segetta*.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 7, *Perigea*.

HABITAT.—Massachusetts in September; New York, west to the Central States, south to Florida and Texas; Texas in November and December; District of Columbia in October.

The types are in the British Museum. *Claufacta* is a rubbed specimen, but of the normal type. *Commoda* is a more obscure form in which the white is almost eliminated. It is quite probable that Walker has still further described the species from South America, but I had no time to study the matter, and the relief of our own literature from unidentified names was my chief object.

***C. punctifera* Wlk.**

1856. Wlk., C. B. Mus., Het., x, 263, *Celæna*.
semifurcata Wlk.
 1856. Wlk., C. B. Mus., Het., x, 732, *Celæna*.

HABITAT.—"United States;" St. Domingo.

Walker's types are in the British Museum. That of *punctifera* is one of Doubleday's specimens without locality and may have come from Florida. The other specimens are under the other name, one from the "West Indies," the other from Jamaica. Walker gives it from St. Domingo. The insect has the wing form of *albolabes*, but it is much smaller. It is like *fabrefacta* in color; the ordinary spots are well marked and the reniform is spotted with white.

***P. falsa* Grt.**

1889. Grt. Can. Ent., xii, 215, *Perigea*.

HABITAT.—Havilah, California.

The type is in the British Museum. The insect has a curious resemblance to *Mamestra leucogramma*.

P. albolabes Grt.1880. Grt., Can. Ent., xii, 216, *Perigea*.HABITAT.—Prescott, Arizona; Colorado in August; New Mexico.
The type is in the British Museum.**P. loculosa** Grt.1881. Grt., Papilio, i, 154, *Perigea*.HABITAT.—Tucson, Arizona; New Mexico.
Types are with Mr. Neumœgen and in the British Museum.**P. fasciata** Hy. Edw.1886. Hy. Edw., Ent. Amer., ii, 169, *Perigea*.HABITAT.—Colorado Desert.
The types are in Mr. Edwards's collection.**P. perplexa** Grt.*This species is not sanctioned by description so far as I can find.
is a common western form and has been quite generally distributed
by Mr. Grote, the name appearing in his check list.**P. pulverulenta** Smith.*1891. Smith, Trans. Am. Ent. Soc., xviii, 105, *Perigea*.HABITAT.—Colorado, Glenwood Springs in August.
Types are in the National Museum and with Mr. Neumœgen.**P. dilecta** Hy. Edw.1884. Hy. Edw., Papilio, iv, 123, *Perigea*.HABITAT.—Arizona.
The type is with Mr. Neumœgen, who says it is an *Uloloncha*.**P. continens** Hy. Edw.1884. Hy. Edw., Papilio, iv, 122, *Perigea*.HABITAT.—Arizona.
The type is in Mr. Neumœgen's collection.**P. niveirena** Harv.1876. Harv., Can. Ent., viii, 53, *Perigea*.HABITAT.—Vancouver.
A type is in the British Museum; another in the Edwards collection.**P. benigna** Hy. Edw.1884. Hy. Edw., Papilio, iv, 122, *Perigea*.HABITAT.—Arizona.
The type is with Mr. Neumœgen, and seems to be a rubbed specimen
of *Hadena chryselectra*.

P. mersa Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 120, *Segetia*.

HABITAT.—California.

The type is in the Strecker collection.

P. proxima Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 240, *Segetia*.

HABITAT.—Texas.

Genus **DIPTERYGIA** Steph.

1829. Steph., Ill. Brit. Ent., Haust., II, 167.

D. scabriuscula Linn.*1758. Linn., Syst. Nat., ed. x, 516, *Noctua*.1759. Clerck, Icones, t. 1, f. 8, *Noctua*.1871. Stgr., Cat. Lep. Eur., 103, *Dipterygia*.
pinastri Linn.1761. Linn., Fn. Suec., 315, 1188, *Noctua*.1767. Linn., Syst. Nat., ed. XII, II, 851, *Noctua*.1787. Fabr., Mant. Ins., II, 171, *Noctua*.1789. Gmelin, in Linn., Syst. Nat., ed. XIII, v, 2569, *Noctua*.1810. Hbn., Eur. Schmett., IV, pl. 51, f. 246, *Noctua*.1816. Hbn., Verzeichniss, 244, *Calliergia*.1829. Steph., Ill. Br. Ent., Haust., II, 168, *Dipterygia*.1852. Gn., Spec. Gen., Noct., I, 146, *Dipterygia*.1856. Wlk., C. B. Mus., Het., x, 180, *Dipterygia*.1862. Grt., Proc. Ent. Soc. Phil., I, 218, *Dipterygia*.

1871. Stgr., Cat. Lep. Eur., 103, pr. syn.

HABITAT.—Canada; Northern, Eastern, and Central United States, June to September; Colorado; Texas in March.

This is one of the species common to Europe and eastern North America, and has a much larger European bibliography, which it is not necessary to give here. It seems to have been seldom referred to in such way as to merit citation in our country.

Genus **HYPPA** Dup.

1844. Dup., Cat. Meth., IV, 231.

H. xylinoides Gn.*1852. Gn., Spec. Gen., Noct., II, 106, pl. 8, f. 11, *Hadena*.1856. Wlk., C. B. Mus., Het., XI, 584, *Hadena*.1870. Saund., Can. Ent., II, 33, *Hadena*—larva.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 110, *Hyppa*.1876. Grt., Stett. Ent. Zeit., XXXVII, 137, *Hyppa*.
rectilinea † Wlk.1857. Wlk., C. B. Mus., Het., XI, 579, *Hadena*.1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.
contraria Wlk.1857. Wlk., C. B. Mus., Het., XI, 627, *Xylinea*.1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.
ancociscoensis Morr.1875. Morr., Can. Ent., VII, 188, *Hadena*.

1875. Grt., List Noctuidæ, 20, pr. syn.

1876. Grt., Stett. Ent. Zeit., XXXVII, 137, pr. syn.

HABITAT.—Canada to Virginia, west to the Central States; New Hampshire in August; Canada, July and August; New York, May, June, August, September; Illinois, August and September.

The types of *xylinoides* and *contraria* are in the British Museum and are correctly referred. Mr. Morrison's type I have not seen, but have seen specimens named by him, and Mr. Grote's reference is undoubtedly correct.

Genus **VALERIA** Germ.

1821. Germ., Mag. Ent., iv. p. 1

1829. Steph., Ill. Brit. Ent., Haust., III, 22.

V. opina Grt.

1878. Grt., Bull. Geol. Surv., iv, 178, *Dryobota*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 146, *Valeria*.

HABITAT.—California in October.

The type is in the British Museum. Mr. Graef also has one of the specimens from which the description was made.

Valeria is credited to Germar in literature, and the date given by the nomenclator is 1821. I have been unable to find that Germar used the term at all, and on applying to Mr. Kirby, he informs me that he can find no earlier use of the term than that cited from Stephens. I give the citation from Germar as I find it; but it is incorrect.

Genus **CALOPHASIA** Steph.

1829. Steph., Ill. Br. Ent., Haust., II, 61.

C. strigata Smith.*

1891. Smith, Trans. Am. Ent. Soc., xviii, 107, *Calophasia*.

HABITAT.—Colorado.

The type is in the National Museum.

Genus **HOMOHADENA** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 180.

A monographic revision of the species will be found in the Proceedings of the United States National Museum for 1890, vol. xliii, 399-404, in which all the species are fully described.

H. incommitata Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 6, *Homohadena*.

1875. Harv., Can. Ent., vii, 136, *Homohadena*.

HABITAT.—Texas in May.

The type is in the British Museum.

H. inconstans Grt.

1883. Grt., Can. Ent., xv, 28, *Homohadena*.

HABITAT.—Arizona.

The type is in Mr. Neumægen's collection.

H. figurata Harv.*

1875. Harv., Can. Ent., VII, 117, *Homohadena*.

HABITAT.—Nevada; California; Colorado, Glenwood Springs in September.

The type is in the British Museum and seems to be a good species, distinct from *retroversa*, which it resembles from the description.

H. chorda Grt.

1880. Grt., Can. Ent., XII, 256, *Homohadena*.

HABITAT.—Colorado; Sierra Nevada, California.

The type is in the British Museum.

H. epipaschia Grt.

1882. Grt., Proc. Kans. Ac. Sci., VIII, 49, *Homohadena*.

HABITAT.—Kansas; New Mexico.

The type is with Mr. Neumœgen.

H. vulnærea Grt.

1883. Grt., Can. Ent., XV, 29, *Homohadena*.

HABITAT.—Arizona.

The type is in Mr. Neumœgen's collection.

H. deserta Smith.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 402, *Homohadena*.

HABITAT.—Colorado Desert.

The type is in the Edwards collection.

H. induta Harv.*

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 274, *Homohadena*.

1875. Morr., Can. Ent., VII, 91 = *retroversa*.

1875. Harv., Can. Ent., VII, 118, *Homohadena*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 6, an sp. dist.

HABITAT.—Texas, in April and May.

The type is in the British Museum.

H. retroversa Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 157, *Homohadena*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 6 = *kappa*.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 403, an sp. dist.

HABITAT.—Missouri.

The type is in the Tepper collection. A duplicate is in the National Museum, named by Morrison, but scarcely like the type and much more like *kappa*. It is possible that the type will prove an aberrant *kappa*, as suggested by Dr. Harvey.

H. infixa Wlk.*

1856. Wlk., C. B. Mus., Het., IX, 178, *Xylophasia*.

1890. Smith, Proc. U. S. Nat. Mus., XIII, 445, an *Homohadena*†

kappa Grt.

1874. Grt., Trans. Am. Ent. Soc., V, 92, *Homohadena*,

HABITAT.—Missouri; Iowa; Kansas; Texas; Florida, in October.

The types are in the British Museum. From Walker's description I suspected that his species would be referable to this genus, but would not have been possible to identify it without seeing the type.

H. badistriga* Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 20, *Hadena*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 181, *Homohadena*.

1875. Grt., Check List Noctuidæ, pl. i, f. 5, *Homohadenc*.

1878. Lint., Ent. Contr., iv, 93, *Homohadena*.

HABITAT.—Canada and New York, in July; Maine to Texas; west to Kansas; Colorado.

The type is in the collection of the American Entomological Society.

Genus *ADITA* Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 63.

A. chionanthi* S. & A.

1797. S. & A., Ins. Ga., ii, 195, pl. 98, *Phalæna*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 63, *Adita*.

1875. Morr., Ann. Lyc. Nat. Hist. N. Y., xi, 95, *Adita*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 155, 168, *Adita*.

HABITAT.—Georgia; New York; Canada, in August; Platte Cañon, Colorado.

Genus *ONCOCNEMIS* Led.

1857. Lederer, Noct. Eur., 94.

A monographic revision of the species of this genus will be found in the Trans. Am. Ent. Soc., xvi, 321–349, 1889, which should be consulted for specific characters.

O. hayesi* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 106, pl. 3, f. 13, *Oncocnemis*.

HABITAT.—Colorado, July, August, September; Nevada County, California, September; British Columbia.

The type is in the British Museum.

O. dayi* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 105, pl. 3, f. 8, *Oncocnemis*.

1877. Grt., Bull. Geol. Surv., iii, 116, *Oncocnemis*.

HABITAT.—Colorado, 10,000 feet, August and September.

The type is in the British Museum.

O. mirificalis* Grt.

1879. Grt., Bull. Geol. Surv., v, 207, *Oncocnemis*.

HABITAT.—Nevada; California, Nevada County, in September.

The type is in the Edwards collection.

O. fasciatus Smith.*

1888. Smith, Insect Life, 1, 18, *Oncocnemis*.

HABITAT.—Southwest Colorado, August 20; Nevada County, California, September.

The type is in the National Museum.

O. tenuifascia Smith.*

1888. Smith, Insect Life, 1, 18, *Oncocnemis*.

HABITAT.—Colorado, August and September.

The type is in the Tepper collection; others in the National Museum.

O. atrifasciata Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 431, *Metahadena*.

1878. Grt., Can. Ent., x, 234, *Homohadena*.

1890. Grt., Bull. Bkln. Ent. Soc., III, 38, *Homohadena*.

1889. Smith, Trans. Am. Ent. Soc., xvi, 329, *Oncocnemis*.

HABITAT.—Maine; New York, Adirondack Mountains.

A type is in the Tepper collection; another is in the British Museum.

O. terminalis Smith.*

1888. Smith, Insect Life, 1, 19, *Oncocnemis*.

HABITAT.—Colorado, Denver and Boulder, in August.

The type is in the Tepper collection; another specimen is in the National Museum.

O. levis Grt.*

1890. Grt., Can. Ent., xii, 254, *Oncocnemis*.

HABITAT.—Arizona; Colorado, Golden City and Denver, in August, Glenwood Springs in September.

Types are in the British Museum, and in the U. S. National Museum; the latter originally given me by Mr. Grote himself. Still another is with Mr. Neumegen.

O. simplex Smith.

1888. Smith, Insect Life, 1, 20, *Oncocnemis*.

HABITAT.—Ashley Valley, Utah.

The type is in the Edwards collection.

O. augustus Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 73, pl. 3, f. 5, *Oncocnemis*.

1877. Grt., Bull. Geol. Surv., III, 176, *Oncocnemis*.

HABITAT.—Texas in October; Colorado in August.

The type is in the British Museum.

O. iricolor Smith.*

1888. Smith, Insect Life, 1, 19, *Oncocnemis*.

HABITAT.—Colorado; Denver in August and September.

Types are in the National Museum and in the Tepper collection.

O. saundersiana Grt.*1876. Grt., Can. Ent., VIII, 29, *Oncocnemis*.1889. Smith, Trans. Am. Ent. Soc., XVI, 337, *Oncocnemis*.

HABITAT.—Texas in October; Illinois; Missouri in July; Canada.

The type is in the British Museum. This is a most curiously distributed species, occurring in isolated specimens only.

O. behrensi Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 65, *Oncocnemis*.1877. Grt., Bull. Geol. Surv., III, 116, *Oncocnemis*.

HABITAT.—California in February.

The type is in the British Museum.

O. pernotata Grt.1883. Grt., Can. Ent., XV, 25, *Oncocnemis*.

HABITAT.—Arizona.

The type is in the Neumögen collection.

O. glennyi Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 141, pl. 4, f. 17, *Oncocnemis*.

HABITAT.—Colorado, July; Denver in September and October.

The type is in the British Museum.

O. homogena Grt.1874. Grt., Bull. Geol. Surv., III, 800, *Oncocnemis*.

HABITAT.—Colorado in August.

The type is in the British Museum.

O. extremis Smith.1890. Smith, Ent. Amer., VI, 30, *Oncocnemis*.

HABITAT.—Northwest British Columbia.

The type is with Mr. Neumögen.

O. occata Grt.*1874. Grt., Trans. Am. Ent. Soc., V, 114, *Cleophana*.1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 9, 16, pl. II, f. 6, *Cleophana*.1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 87, *Oncocnemis*.1876. Grt., Stett. Ent. Zeit., XXXVII, 136, *Oncocnemis*.

HABITAT.—Texas, February and March; California, April and May; Colorado in August.

The type is in the British Museum.

O. meadiana Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 60, *Oncocnemis*.1877. Grt., Bull. Geol. Surv., III, 117, *Oncocnemis*.

HABITAT.—Arizona.

The type is in the Tepper collection.

O. fortis Grt.*

1880. Grt., Can. Ent., XII, 257, *Homohadena*.
 1889. Smith, Trans. Am. Ent. Soc., XVI, 340, *Oncocnemis*
picina Grt.
 1880. Grt., Can. Ent., XII, 257, *Homohadena*.
 1890. Smith, Proc. U. S. Nat. Mus., XIII, 401, *Homohadena*.
vorax Behrens.
 1884. Behrens, Papilio, IV, 24, *Agrotis* (larva only).
 1884. Smith, Papilio, IV, 114, *Polia* (desc. imago).
 1889. Smith, Trans. Am. Ent. Soc., XVI, 340, pr. syn.

HABITAT.—Nevada; California.

The type of *picina* is in the British Museum; that of *fortis* is in the Tepper collection, and that of *vorax* I have had from Dr. Behrens for description. They all refer to one species only, slightly variable in ground color and in the relative distinctness of the punctiform markings. I did not know *picina* when I wrote, but suspected the synonymy from the descriptions.

O. chandleri Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 107, pl. 3, f. 9, *Oncocnemis*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 87, *Oncocnemis*.
 1877. Grt., Bull. Geol. Surv., III, 17, *Oncocnemis*.

HABITAT.—Colorado, in July, August, and September; Nevada.

The type is in the British Museum; a specimen marked "type" by Mr. Morrison is in the National Museum.

O. riparia Morr.*

1875. Morr., Can. Ent., VII, 213, an var. *chandleri*.
 1876. Grt., Bull. Buff. Soc. Nat. Sci., III, 87, = *chandleri*.
 1876. Grt., Stett. Ent. Zeit., XXXVII, 117, = *chandleri*.
 1877. Grt., Bull. Geol. Surv., III, 117, *chandleri*.
 1879. Tepper, Bull. Bkln. Ent. Soc., I, 31, locality and habits.
 1880. Grt., Can. Ent., XII, 256, = *chandleri*.
 1881. Grt., Papilio, I, 34, an sp. dist.?
 1889. Smith, Trans. Am. Ent. Soc., XVI, 343, dist. charact.

HABITAT.—Long Island, Buffalo, New York; Isle of Shoals, Massachusetts, in July.

A "type" is in the Tepper collection; another in the British Museum from the Grote material.

O. colorada Smith.*

1892. Smith, Ent. News, IV, 100, pl. VI, fig. 5, *Oncocnemis*.

HABITAT.—Central and western Colorado, July, August, and October.

The type is in the National Museum.

O. major Grt.*1880. Grt., Papilio, I, 33, *Oncocnemis*.1889. Smith, Trans. Am. Ent. Soc., XVI, 344, *Oncocnemis*.
aqualis Grt.1881. Grt., Papilio, I, 33, *Oncocnemis*.1889. Smith, Trans. Am. Ent. Soc., XVI, 345, *Oncocnemis*.
curricollis Grt.1883. Grt., Can. Ent., xv, 10, *Oncocnemis*.

1889. Smith, Trans. Am. Ent. Soc., XVI, 344, pr. syn.

HABITAT.—Arizona; Colorado, Salida in July; California.

Types of *major* are in the Neumøgen collection and in the British Museum. The types of *curricollis* are in the National Museum and in the Neumøgen and Graef collections and have been already referred to *major* by me. The type of *aqualis* is in the British Museum and is also the same as *major*; it is smaller, and the dashes in the space are not interrupted; but this is a variable character, and in the type of *major* in the Museum, they are barely to be termed interrupted. The British Museum types both of *major* and *aqualis* are females.

O. oblita Grt.1877. Grt., Bull. Geol. Surv., III, 117, *Oncocnemis*.

HABITAT.—Nevada.

The type is in the British Museum. It agrees well with the description, but does not seem to be an *Oncocnemis*; at least I can not make out a claw to the fore tibia. I have seen the species without recognizing it. Mr. Grote states positively "Fore tibiæ with a short claw," and if it is possible that the type specimen has become defective, I can not present dispute the reference.

O. cibalis Grt.*1880. Grt., Can. Ent., XII, 244, *Oncocnemis*.

HABITAT.—Colorado in October.

The type is with Mr. Graef.

O. gracillima Grt.*1881. Grt., Can. Ent., XIII, 231, *Oncocnemis*.

HABITAT.—Arizona.

The type is with Mr. Neumøgen.

O. atricollaris Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 273, *Homohadena*.1875. Morr., Can. Ent., VII, 91, *Copihadena*.1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 73, *Oncocnemis*.1877. Grt., Bull. Geol. Surv., III, 117, *Oncocnemis*.1881. Grt., Papilio, I, 34, *Oncocnemis*.

HABITAT.—Texas in March and May; Arizona; Colorado in August. I have not seen the type, nor have I been able to find where it is.

O. griseicollis Grt.

1882. Grt., Can. Ent., xiv, 19, *Oncocnemis*.

HABITAT.—Arizona.

The type is with Mr. Neumægen.

O. aterrima Grt.

1879. Grt., Can. Ent., xi, 199, *Oncocnemis*.

1889. Smith, Trans. Am. Ent. Soc., xvi, 324, an *Heliothid*.

HABITAT.—California.

Types are in the Edwards collection and in the British Museum. The Edwards specimen I had seen when I wrote in 1889, and the Museum specimen simply confirms my opinion. The anterior tibiæ are as in *Melicleptria*, shortened, with a single stout claw. The wings are broad, trigonate, the head small, eyes ovate. I leave it here until a new study of the Heliothid series brings it into a more natural relationship.

Genus *APOROPHYLA* Gn.

1841. Gn., Ind. Meth., Ann. Soc. Ent. Fr., x, 246.

A. yosemitæ Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 113, 145, pl. iii, f. 3, *Cucullia*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 309, *Aporophyla*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 349, *Aporophyla*.

HABITAT.—Yosemite, California, October 12.

The type is in the Edwards collection.

Genus *MACRONOCTUA* Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 27.

M. onusta Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 27, *Macronoctua*.

HABITAT.—Maine, in September; New York; New Jersey; Illinois; Iowa.

I do not know where the type of this species is to be found at present. I did not see it in the British Museum.

Genus *LATHOSEA* Grt.

1881. Grt., Bull. Geol. Surv., vi, 270.

L. pullata Grt.

1881. Grt., Bull. Geol. Surv., vi, 270, *Lathosea pulla*.

1890. Grt., Revised List Noct., 14, *L. pullata*.

HABITAT.—Oregon; Colorado.

The type is in the British Museum. It is a robust, xylinoid form with retracted head and short tongue, and has the appearance of *Scotochrosta*. The markings are strigate as in the Cuculliid series and it is a rather near ally of my *Pleroma*, I think. It seems a little out of place here; but until the material can be critically studied it had better be left as it is. Mr. Bruce has recently sent me a specimen from Colorado, which agrees fairly well with the type.

Genus **HADENELLA** Grt.

1883. Grt., Papilio, III, 123.

H. pergentilis Grt.*1883. Grt., Papilio, III, 123, *Hadenella*.1883. Grt., Proc. Am. Phil. Soc., XXI, 156, 169, *Hadenella*.1883. Grt., Can. Ent., XV, 122, *Hadenella*.

HABITAT.—Washington; Colorado; Wyoming.

Types are in the Neumøgen collection.

Genus **TRICHOPOLIA** Grt.

1883. Grt., Papilio, III, 76.

T. dentatella Grt.1883. Grt., Papilio, III, 76, *Trichopolia*.

HABITAT.—Arizona.

The type is with Mr. Neumøgen.

T. ptilodonta Grt.1883. Grt., Papilio, III, 77, *Trichopolia*.

HABITAT.—Arizona.

The type is with Mr. Neumøgen.

Genus **DRYOBOTA** Lcd.

1857. Lederer, Noct. Eur., 100.

None of the species heretofore described under this generic term belong to it. The small species recently described by myself are better placed in *Cleoceris*, as I find by examining the European forms. Mr. Grote's species, antedated by Walker, can not remain here; but as I have no more convenient place for it just now, no change is made.

D. illocata Wlk.*1857. Wlk., C. B. Mus., Het., XI, 758, *Hadena*.*stigmata* Grt.1875. Grt., List Noctuidæ, 23, *Dryobota*.1877. Grt., Can. Ent., IX, 199, *Dryobota*.1891. Smith, Trans. Am. Ent. Soc., XVIII, 108, † *Dryobota*.

HABITAT.—Canada; Eastern, Middle, and Central States; Colorado, Massachusetts in September; New York, August and September.

The types are in the British Museum and refer to one species only. Walker's species was described from "locality unknown."

Genus **PACHYPOLIA** Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 27.

P. atricornis Grt.1874. Grt., 6th Rept. Peab. Ac. Sci., 27, *Pachypolia*.1875. Grt., List Noctuidæ, pl. f. 8, *Pachypolia*.

HABITAT.—Illinois, in October.

The type in the British Museum has pointed wings, color and type of maculation as in *occulta*, but with lengthily pectinated male antennæ. I do not remember having seen the species previously.

Genus **POLIA** Ochs.

1816. Ochs., Schmett. Eur., iv, 73.

Two quite distinct types are referred to this genus in our American material. Whether they can remain associated is questionable, but need not be decided here.

P. aedon Grt.

1880. Grt., Can. Ent., xii, 154, *Polia*.

HABITAT.—Colorado, in August; Nevada; Washington.

A type is in the British Museum; another with Mr. Neumœgen.

P. theodori Grt.*

1878. Grt., Can. Ent., x, 235, *Apatela*.

1880. Grt., Can. Ent., xii, 219, *Polia*.

1882. Grt., Ill. Essay, 55, pl., ii, f. 17, *Polia*.

var. *epichysis* Grt.

1880. Grt., Can. Ent., xii, 219, *Polia*.

1882. Grt., Ill. Essay, 55, pl., ii, f. 18, *Polia*.

HABITAT.—Colorado, August and September; New Mexico, California.

Both types are in the British Museum. I have seen considerable material of both forms and have no doubt of their relationship. Mr. Hy. Edwards first suggested it to me some years ago.

P. olorina Grt.

1876. Grt., Bull. Buff. Soc. Nat. Sci., iii, 84, *Hadena*.

HABITAT.—California; Colorado.

The type is in the British Museum; another specimen, also marked "type," is in the Edwards collection. The species is allied to *Polia theodori* and varies in the direction of suffusion with black.

P. diversilineata Grt.*

1877. Grt., Bull. Geol. Surv., iii, 119, *Hadena*.

illepida Grt.

1879. Grt., Can. Ent., xi, 95, *Polia*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 156, *Polia*.

HABITAT.—New Mexico; Nevada; Colorado; Maniton in July.

The type of *diversilineata* is a badly patched specimen covered with mildew, in the Cambridge collection. The type of *illepida* is in the British Museum; others, labeled by Mr. Grote, but not marked type, are in the National Museum. The two names refer to the same species.

P. confragosa* Morr.1874. Morr., Proc. Bost. Soc. Nat. Hist., xvii, 138, *Polia*.

HABITAT.—Quebec, Canada; Wisconsin.

The type is with Prof. F. K. Belanger, and must be a strongly marked insect, from the description. The National Museum specimens are from the Meske collection and may not be well named.

***P. speciosa* Morr.**1874. Morr., Proc. Bost. Soc. N. H., xvii, 137, *Polia*.

HABITAT.—Cambridge, Mass., July 17.

The type is in the Graef collection.

***P. pallifera* Grt.**1877. Grt., Can. Ent., ix, 88, *Polia*.1883. Grt., Proc. Am. Phil. Soc., xxi, 156, *Polia*.

HABITAT.—Illinois.

The type is in the British Museum and is a species I had not before seen.

P. pulverulenta* Smith.1891. Smith, Trans. Am. Ent. Soc., xviii, 106, *Polia*.

HABITAT.—Colorado in September.

The type is in the National Museum. The species is unlike any in the British Museum and does not agree with the description of the others.

P. contacta* Wlk.1856. Wlk., C. B. Mus., Het., ix, 58, *Acronycta*.1882. Grt., Ill. Essay, 39, *Polia*.*aspera* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 134, *Acronycta*.1880. Grt., Can. Ent., xii, 186, *Polia*.1880. Grt., Bull. Bkln. Ent. Soc., iii, 37, *Polia*.*diffusilis* Harv.1878. Harv., Can. Ent., x, 56, *Polia*.1880. Grt., Bull. Bkln. Ent. Soc., iii, 37, - *aspera*.1880. Grt., Can. Ent., xii, 186, = *aspera*.1882. Grt., Ill. Essay, 39, - *contacta*.

HABITAT.—Hudson's Bay Territory; Adirondack Mountains, New York, in August.

Types of *contacta* and *diffusilis* are in the British Museum, though I did not see the *contacta*. Mr. Grote apparently did see it, and as he had the type of Harvey's species his reference can be taken as correct. The type of *aspera* is in the Tepper collection, and is the same as *diffusilis* type.

P. medialis Grt.

1876. Grt., Ann. Lyc. Nat. Hist., N. Y., XI, 306, *Polia*.

HABITAT.—Canada; Schenectady, New York, in September.

The type is in the British Museum. It is a broad-winged form; looks like *Agrotis trabalis* and has the structural characters of *Dryobota stigmata*. The male antennæ are pectinated.

P. acutissima Grt.

1875. Grt., Check List Noct., 23, pl., f. 9, *Pachypolia*.

1881. Grt., Bull. Geol. Surv., VI, 267, *Polia*.

HABITAT.—Canada, Montreal; Nova Scotia.

The type is in the British Museum. It resembles *medialis*, but is much larger and a broader winged form.

Genus **FISHIA** Grt.

1877. Grt., Can. Ent., IX, 21.

F. enthea Grt.

1877. Grt., Can. Ent., IX, 21, *Fishia*.

HABITAT.—Oldtown, Maine.

The type is in the British Museum and is a species I had not before seen. It has the appearance of *Hadena evelina* French, and in structure is an *Hadena* with brush-like male antennæ.

Genus **ACTINOTIA** Hbn.

1816. Hbn., Verzeichniss, 244.

A. ramosula Gn."

1852. Gn., Spec. Gen., Noct., II, 114, pl. 9, f. 1, *Cloantha*.

1857. Wlk., C. B. Mus., Het., XI, 616, *Auchmis*.

1873. Grt., Bull. Buff. Nat. Sci., I, 83, pl. II, f. 16, *Cloantha*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States, May, June, August, and September.

A. stewarti Grt.

1875. Grt., Can. Ent., VII, 28, *Actinotia*.

HABITAT.—California.

The type is in the British Museum, a duplicate thereof in the Edwards collection.

Genus **LUSSA** Grt.

1883. Grt., Can. Ent., XV, 127.

L. nigroguttata Grt.

1883. Grt., Can. Ent., XV, 127, *Lussa*.

HABITAT.—Florida.

The type is in the Neumægen collection. Mrs. Slosson has taken this species at Charlotte Harbor. It looks like a West Indian species and may be previously described from that locality.

Genus **LAPHYGMA** Gn.

1852. Gn., Spec. Gen., Noct., 1, 156.

L. frugiperda S. & A.*

1797. S. & A., Ins. Ga., II, 191, pl. 96, *Phalæna*.
 1832. Geyer, Zutræge, 22, No. 342, ff. 683, 684, *Trigonophora*.
 1852. Gn., Spec. Gen., Noct., 1, 159, *Laphygma*.
 1856. Wlk., C. B. Mus., Het., IX, 189, *Laphygma*.
 1882. Riley, Papilio, II, 43, *Laphygma*.
 1885. Riley, 4th Rept. U. S. Ent. Comm., 353, pl. 62, f. 2, *Laphygma macra* Gn.
 1852. Gn., Spec. Gen., Noct., 1, 157, *Laphygma*.
 1868. H. Sch., Corr. Blatt, 1868, 115, pr. syn. *signifera* Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 193, *Prodenia plagiata* Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 194, *Prodenia autumnalis* Riley.
 1871. Riley, 3d Rept. Ins. Mo., 109, ff. 44-49, *Prodenia*.
 1871. Riley, Am. Ent., II, 363, ff. 221, 223, *Prodenia*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, = *frugiperda*.
 1876. Riley, 8th Rept. Ins. Mo., 48, ff. 26, 27, *Prodenia*.
 1881. Grt., Can. Ent., XIII, 91, = *frugiperda*.
 var. *fulvosa* Riley.
 1876. Riley, 8th Rept. Ins. Mo., 49, *Prodenia*.
 var. *obscura* Riley.
 1876. Riley, 8th Rept. Ins. Mo., 49, *Prodenia*.

HABITAT.—Canada, south to Florida and Texas, west to Missouri, Nebraska, Kansas; Jamaica; Brazil; August, September and October.

The economic bibliography of this insect is large, and only a meagre outline is here given to accredit the species and varieties.

The types of *macra* and of Walker's species are in the British Museum. Dr. Riley's types are in the National Museum.

L. flavimaculata Harv.*

1876. Harv., Can. Ent., VIII, 54, *Caradrina*.
 1876. Grt., Can. Ent., VIII, 189, = *L. frugiperda*.
 1890. Grt., Revised Check List, 23, an sp. dist.

HABITAT.—California, March, April, August to November; Colorado.

The type is in the British Museum. A fine series of specimens in the National Museum, many of them bred, long since led me to the conclusion that the species was a good one, but better referred to *Laphygma* than to *Caradrina*.

L. inflexa Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 65, *Laphygma*.

HABITAT.—Florida.

The type is in the Tepper collection. To the kindness of Prof. Cook I owe an opportunity of studying the type. It is, like so many of Morrison's types, a poor specimen, and will probably be found referable to *Lussa* Grt., and a not distant relative of *L. nigroguttata*.

Genus **PRODENIA** Gn.

1852. Gn., Spec. Gen., Noct., I, 159.

P. eridania Cram.*1782. Cram., Pap. Exot., IV, 133, pl. 358, f. E and F, *Phalæna*.1816. Hbn., Verzeichniss, 244, *Calliergia*.1852. Gn., Spec. Gen., Noct., I, 148, *Xylomiges*.1856. Wlk., C. B. Mus., Het., IX, 182, † *Xylomiges*.*phylolacæ* S. & A.1797. S. & A., Ins. Ga., II, 193, pl. 97, *Phalæna*.

1852. Gn., Spec. Gen., Noct., I, 148, pr. var.

1856. Wlk., C. B. Mus., Het., IX, 183, pr. syn.

1873. Grt., Bull. Buff. Soc. Nat. Sci., II, 28, *Xylomiges*.1879. Grt., Can. Ent., XI, 215, *Prodenia*.*derupta* Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 62, *Actinotia*.1879. Grt., Can. Ent., XI, 205, †=*phylolacæ*.1890. Grt., Can. Ent., XII, 186, =*phylolacæ*.*nigrofasciata* Hulst.1881. Hulst, Bull. Bkln. Ent. Soc., III, 77, *Leucania*.1881. Hulst, Bull. Bkln. Ent. Soc., IV, 7, pl. I, f. 9, *Leucania*.

1891. Smith, List Lepidoptera, 45, pr. syn.

HABITAT.—Georgia; Florida; Texas in September; Central and South America.

A distinctly marked yet strongly variable species. The names above given apply to our own fauna only; the insect has been further re-described by Walker as *Xylina inquieta*, *Prodenia strigifera*, and *Leucania externa*, and by Mr. Butler as *Prodenia ignobilis*. The types of these latter are in the British Museum. Mr. Hulst's type is now at Rutgers, and Mr. Morrison's is with Mr. Graef. I think there are yet more names, but as they are based on other than boreal American specimens, they are not noted here.

P. commelinæ S. & A.*1797. S. & A., Ins. Ga., II, 189, pl. 95, *Phalæna*.1816. Hbn., Verzeichniss, 217, *Trigonophora*.1852. Gn., Spec. Gen., Noct., I, 162, *Prodenia*.1856. Wlk., C. B. Mus., Het., IX, 193, *Prodenia*.

HABITAT.—Massachusetts; District of Columbia, August to October, southward; Texas in December; Illinois, August and September.

Hübner and Herrich-Schæffer both refer this as the same as *androgena* Cramer, while Guenée refers to them as distinct species. The matter is not an important one for present settlement. Gundlach in his Contributions describes also the early stages.

P. ornithogalli Gn.*1852. Gn., Spec. Gen., Noct., I, 163, *Prodenia*.1856. Wlk., C. B. Mus., Het., IX, 193, *Prodenia*.1882. Riley, Papilio, II, 43, *Prodenia*.*lineatella* Harv.1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 275, *Prodenia*.

1881. French, Can. Ent., XIII, 24, larva.

1882. Riley, Papilio, II, 43, † pr. syn.
commelinæ † Riley.
 1869. Riley, 1st Rept. Ins. Mo., 87, *Prodenia*.
 1871. Riley, 3d Rept. Ins. Mo., 113, f. 48b, *Prodenia*.
 1871. Riley, Amer. Ent., II, 62, f. 41, *Prodenia*.
 1875. Grt., Check List Noct., 11, pr. syn.
 1881. Riley, Suppl. and Index to Mo. Repts., 56, pr. syn.

HABITAT.—Massachusetts in July; New York, southward to Florida; west to Minnesota; Nebraska; California in April, September, and October; Texas in April and October.

Dr. Harvey's type is in the British Museum, and is like specimens of Guenée's species, apparently typical, though not the types.

P. eudiopta* Gn.

1852. Gn., Spec. Gen., Noct., I, 164, *Prodenia*.
 1856. Wlk., C. B. Mus., Het., IX, 193, *Prodenia*.
flavimedia Harv.
 1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 274, *Prodenia*.
 1882. Riley, Papilio, II, 43, = *ornithogalli*.
commelinæ † Riley.
 1871. Riley, 3d Rept. Ins. Mo., 113, f. 48c, *Prodenia*.
 1881. Riley, Suppl. and Index to Mo. Repts., 56, pr. syn.

HABITAT.—Massachusetts in September; New York to Florida; Texas in April; Missouri; Nebraska; California; District of Columbia in August.

The type of *flavimedia* is in the British Museum and is like specimens of *eudiopta*, typical though not types of Guenée's species.

P. præfica* Grt.

1875. Grt., Can. Ent., VII, 44, *Prodenia*.

HABITAT.—California in June.

The type is in the British Museum.

Genus *DARGIDA* Wlk.

1856. Wlk., C. B. Mus., Het., IX, 201.

D. procinctus* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 138, pl. IV, f. 6, *Eupsephopætes*.

HABITAT.—California, March, June, August, September, October; Colorado in October; Portland, Oregon, April, May.

The type is in the British Museum. In the Berliner Museum I saw specimens of *Dargida grammivora* Wlk., that very strongly resemble our species and agree perfectly in generic characters. Mr. Grote's generic term *Eupsephopætes* must sink.

Genus *CONSERVULA* Grt.

1875. Grt., Check List Noct., 11.

C. anodonta* Gn.

1852. Gn., Spec. Gen., Noct., II, 63, pl. VII, f. 8, *Phlogophora*.
 1857. Wlk., C. B. Mus., Het., XI, 541, *Phlogophora*.
 1875. Grt., Check List Noct., 11, *Conservula*.

HABITAT.—Canada; Maine; Vermont, in July and August; northern New York in July.

The type is in the British Museum.

Genus **TRIGONOPHORA** Hbn.

1816. Hbn., Verzeichniss, 217.

T. periculosa Gn.*

1852. Gn., Spec. Gen., Noct., II, 65, *Phlogophora*.

1857. Wlk., C. B. Mus., Het., XI, 542, *Phlogophora*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 17, *Trigonophora*.

var. **V-brunneum** Grt.*

1875. Grt., Check List Noct., 23, *Trigonophora*.

1882. Grt., New List, 29, an var. pr.

HABITAT.—Newfoundland; Canada in July and August; northern, eastern, and central United States, July to September; Colorado; British Columbia.

The types, both of the species and variety, are in the British Museum.

Genus **BROTOLOMIA** Led.

1857. Lederer, Noct. Eur., 115.

B. iris Gn.*

1852. Gn., Spec. Gen., Noct., II, 64, *Phlogophora*.

1857. Wlk., C. B. Mus., Het., XI, 512, *Phlogophora*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 110, *Brotolomia*.

HABITAT.—Canada; Northern, Middle, and Central States, June and July.

The type is in the British Museum. Our species is probably as distinct generically from the European form as are any others in this series, and if the other genera hold, a new genus, *Mesolomia mihi*, must be used for *iris*.

Genus **EUPLEXIA** Steph.

1829. Steph., Ill. Brit. Ent., Haust., III, 3.

E. lucipara Linn.*

1758. Linn., Syst. Nat., ed. x, 518, *Noctua*.

1761. Linn., Fn. Suec., 1201, *Noctua*.

1767. Linn., Syst. Nat., ed. XII, II, 857, *Noctua*.

1781. Fabr., Spec. Ins., II, 233, *Noctua*.

1793. Fabr., Ent. Syst., III, 2, 99, *Noctua*.

1816. Hbn., Verzeichniss, 217, *Trigonophora*.

1829. Steph., Ill. Brit. Ent., Haust., III, 1, *Euplexia*.

1851. Gn., Spec. Gen., Noct., II, 68, *Euplexia*.

1857. Wlk., C. B. Mus., Het., XI, 543, *Euplexia*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 153, *Euplexia*.

1874. Morr., Psyche, I, 22, ♂ organs.

1883. Hy. Edw., Papilio, III, 133, larva.

1889. Dyar, Can. Ent., XXI, 137, life history.

HABITAT.—United States generally, May to August; Europe.

For the European bibliography Staudinger and other similar works should be consulted. In America the species has been but rarely referred to.

Genus **NEPHELODES** Gn.
1852. Gn., Spec. Gen., Noct., 1, 129.

N. minians Gn.*

1852. Gn., Spec. Gen., Noct., 1, 130, *Nephelodes*.
1856. Wlk., C. B. Mus., Het., ix, 163, *Nephelodes*.
1878. French, in 7th Rept. Ins. Ills., 99, 220, larva.
1878. French, Can. Ent., x, 61, larva.
1880. Riley, Amer. Ent., iii, 205, larva.
1881. Riley, Amer. Nat., xv, 575, 577, larva.
1883. Lint., 1st Rept. State Ent., N. Y., 99, ff. 24, 25, life history.
expansa Wlk.
1857. Wlk., C. B. Mus., Het., xi, 399, *Graphiphora*.
1865. Wlk., C. B. Mus., Het., xxxv, 1957, pr. syn.
1868. G. and R., Trans. Am. Ent. Soc., ii, 78, pr. syn.
sobria Wlk.
1857. Wlk., C. B. Mus., Het., xi, 744, *Graphiphora*.
var. *violans* Gn.
1852. Gn., Spec. Gen., Noct., 1, 130, *Nephelodes*.
1856. Wlk., C. B. Mus., Het., ix, 163, *Nephelodes*.
1882. Grt., New List, 29, pr. var.
subdolens Wlk.
1857. Wlk., C. B. Mus., Het., x, 405, *Graphiphora*.

HABITAT.—Canada; United States generally; Eastern States in August and September; Colorado, August to October.

The types of all the names are in the British Museum. *G. expansa* Wlk., I did not find; but as Walker has himself referred it as a synonym he may have removed the label—or what is equally possible, I overlooked the specimen, though I found all the others referable here. *G. sobria* is from Bogota, while *subdolens* is from "locality unknown."

Genus **TRICHOLITA** Grt.
1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 211, 215.

T. signata Wlk.*

1860. Wlk., Can. Nat. and Geol., v, 253, *Nephelodes*.
1877. Grt., Can. Ent., ix, 28, *Tricholita*.
semiaperta Morr.
1874. Morr., Can. Ent., vi, 105, *Hydræcia*.
1874. Morr., Proc. Bost. Soc. N. H., xvii, 150, *Perigrapha*.
1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 211, 215, *Tricholita*.
1875. Grt., Stett. Ent. Zeit., xxxvi, 341, *Tricholita*.
1877. Grt., Can. Ent., ix, 28, pr. syn.

HABITAT.—Canada; New York and Illinois in July and August; Massachusetts in August; Northern, Eastern, Middle, and Central States; New Mexico.

Mr. Morrison's type is in the Tepper collection. The Walker type is in the collection of the Entomological Society of Ontario, and has been

examined by Mr. Grote, who is responsible for its reference to *semi-aperta*. I can not quite understand why Mr. Grote, after positively making it a synonym, should still continue to list *semiaperta* without any reference to *signata*.

T. fistula* Harv.

1878. Harv., Can. Ent., x, 56, *Tricholita*.

HABITAT.—California; Arizona; Colorado in September.

The type is in the British Museum. In the Neumœgen collection Mr. Grote has labeled specimens of this same species *T. completa* Grt., type; but I have not found any description of a species under that name. I included the name in my list on the faith of this label, but it must be omitted hereafter.

***T. inconspicua* Grt.**

1883. Grt., Can. Ent., xv, 129, *Tricholita*.

HABITAT.—Arizona.

The type is with Mr. Neumœgen.

Genus **HELOTROPHA** Led.

1857. Lederer, Noct. Eur., 118.

A. reniformis* Grt.

1874. Grt., Can. Ent., vi, 14, *Luperina*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 18, *Helotropha*.

1876. Speyer, Stett. Ent. Zeit., xxxvi, 202, ♀ an var. *fibrosa*.
var. *atra* Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 200, pr. var.

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 419, sp. dist. pr.

1882. Grt., New List, 29, pr. var.

HABITAT.—Canada; Northern, Middle, and Central States; July to September.

The type of *reniformis* is in the collection at Cambridge; that of *atra* I have not seen, nor do I know where it is.

Genus **HYDRÆCIA** Gn.

1837. Gn., Essai sur la class. Noct., 237.

1852. Gn., Sp. Gen., Noct., i, 125.

The species here placed under this genus have been transferred to *Gortyna*, to *Apamea*, and again to *Hydræcia* by Mr. Grote, as his ideas of types and other matters changed. These changes are not all noted here. In using *Hydræcia* now I follow European precedent. It is quite likely that some of the species do not belong here.

H. lunata* Smith.

1891. Smith, Trans. Am. Ent. Soc., xviii, 110, *Apamea*.

1891. Smith, List Lepidoptera, 45, *Hydræcia*.

HABITAT.—California, Alameda in June, Mount Shasta district.

Types are in the National Museum and in the Edwards collection.

H. u-album Gn.*

1852. Gn., Spec. Gen., Noct., 1, 345, *Ceramica*.
 1856. Wlk., C. B. Mus., Het., x, 418, *C. r-album*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, *C. w-album*.
 1891. Smith, Proc. U. S. Nat. Mus., XIV, 231, *Mamestra purpuripennis* Grt.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 206, *Apamea baliola* Morr.
 1874. Morr., Proc. Bost. Soc. N. H., XVII, 148, *Orthosia*.
 1875. Grt., Can. Ent., VII, 58, = *purpuripennis*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 309, = *purpuripennis*.

HABITAT.—Massachusetts, May, June, August; New York; Illinois; Minnesota.

Guenée's type is in the British Museum. Messrs. Morrison and Grote described at nearly the same time, both from material collected by Mr. Thaxter, who probably has both types.

H. velata Wlk.*

1865. Wlk., C. B. Mus., Het., XXXII, 671, *Apamea*.
 1891. Smith, Can. Ent., XXIII, 121, *Apamea sera* G. & R.
 1868. G. & R., Trans. Am. Ent. Soc., I, 345, pl. 7, f. 55, *Hydracia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 18, *Hydracia*.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 206, *Apamea*.
 1882. Grt., Can. Ent., XIV, 170, *Helotropha*.
 1884. Bean, Can. Ent., XVI, 67, larva on *Anemone*.
 1891. Smith, Can. Ent., XXIII, 121, pr. syn.

HABITAT.—Canada; Maine to Pennsylvania; west to Missouri; Iowa; June, July, and August.

Walker's type is in the National Museum. I do not know where Grote and Robinson's type is at present.†

H. juvenilis Grt.*

1881. Grt., Bull. Geol. Surv., VI, 267, *Gortyna*.
 1881. Grt., Trans. Kans. Ac. Sci., VII, 68, *Gortyna*.

HABITAT.—Colorado; Kansas.

The type is in the British Museum.

H. nictitans Linn.*

1761. Linn., Fn. Suec., 1215, *Noctua*.
 1767. Linn., Syst. Nat., ed. XII, 847, *Noctua*.
 1792. Bkh., Eur. Schmett., IV, 463, *Noctua*.
 1816. Ochs., Schmett. Eur., IV, 75, *Apamea*.
 1816. Hbn., Verzeichniss, 232, *Sideridia*.
 1852. Gn., Spec. Gen., Noct., I, 126, *Hydracia*.

† From this point to *Xylomiges*, my references to dates and localities are less complete, owing to the fact that the set of galley proofs first corrected by me were lost en route or mislaid at the printing office. I threw away the note slips after I had entered them on the galley proofs, and was not able to duplicate them afterward.

1856. Wlk., C. B. Mus., Het., ix, 159, *Hydracia*.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 206, *Apamea*.
 1882. Buckler, Ent. Mo. Mag., xviii, 195, larva.
americana Speyer.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 152, an var. pr.
 var. *erythrostigma* Haw.
 1829. Haw., Lep. Britt., 231, *Apamea*.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 206.
 var. *lucens* Freyer.
 1845. Freyer, Neue Beitr., v, 143, *Apamea*.
 1852. Gn., Spec. Gen., Noct., i, 126, pr. var.
Apamea lusca Harr. MSS.
 1891. Smith, List Lepidoptera, 45, pr. syn.

HABITAT.—Nova Scotia; Hudson's Bay Territory; United States generally, July and August; Europe.

The *Apamea lusca* is in the Harris collection in the Boston Society of Natural History. There seems to be no perceptible constant difference between European and American examples of this species; yet Speyer thought there was enough to authorize a variety *americana*, which was never heard of after its description.

H. erepta Grt.

1881. Grt., Bull. Geol. Surv., vi, 267, *Gortyna*.

HABITAT.—Douglas County, Kansas.

The type is in the British Museum.

H. immanis Gn.*

1852. Gn., Spec. Gen., Noct., i, 128, *Hydracia*.
 1856. Wlk., C. B. Mus., Het., ix, 162, *Hydracia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 18, *Gortyna*.
 1882. Dodge, Can. Ent., xiv, 93, larva on Hops.
 1885. Lint., 2d Rept. Ins. N. Y., 41, larva.
obliqua Harv.
 1876. Harv., Can. Ent., viii, 53, *Gortyna*.
 1881. Grt., Bull. Geol. Surv., vi, 268, *Gortyna*.
 1884. Smith, Bull. 4, Div. Ent. U. S. Dept. Agl., 38, pr. syn.

HABITAT.—Northern United States, Atlantic to Pacific; New York in August; Washington; Colorado; Illinois in August and September.

Guenée's type is in the British Museum; where also there are specimens of *obliqua* Harvey, agreeing with the type in the Edwards collection. There is no reasonable doubt of their identity.

H. stramentosa Gn.

1852. Gn. Spec. Gen., Noct., i, 129, pl. 6, f. 2, *Hydracia*.
 1856. Wlk., C. B. Mus., Het., ix, 162, *Hydracia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 18, *Gortyna*.

HABITAT.—Middle and Central States; New York; Illinois.

The type is in the British Museum.

H. inq̄ssita G. & R.*

1868. G. & R., Trans. Amer. Ent. Soc., 1, 344, *Gortyna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 110, *Hydræcia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 18, *Hydræcia*.
 1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 206, *Apamea*.
 1882. Grt., New List, 29, *Gortyna quæstia* err. type.
 1882. Grt., Can. Ent., xiv, 170, *Apamea*.

HABITAT.—New York; Rhode Island; Eastern, Middle, and Central States; New Hampshire in September.

A specimen labeled by Mr. Grote is in the British Museum. I have not seen the type, and do not know where it is.

H. cerina Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 200, *Gortyna*.
 1882. Grt., Ill. Essay, 59, pl. 11, f. 25, *Gortyna*.

HABITAT.—Kansas; Maine.

The type is in the British Museum.

H. rigida Grt.*

1877. Grt., Can. Ent., ix, 87, *Gortyna*.
 1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.
 1882. Grt., Papilio, 11, pl. 1, f. 3 and 3a, *Gortyna*.
 1882. Grt., Ill. Essay, 58, pl. 11, f. 24, *Gortyna*.

HABITAT.—New York; Massachusetts; Illinois; Maine in September. The type is in the British Museum.

H. impecuniosa Grt.

1881. Grt., Bull. Geol. Surv., vi, 267, *Gortyna*.
 1882. Grt., Can. Ent., xiv, 184, *Gortyna*.

HABITAT.—Massachusetts; New York.

The type is in the British Museum.

H. cataphracta Grt.*

1864. Grt., Proc. Ent. Soc. Phil., 111, 81, pl. 2, f. 3, *Gortyna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, 142, *Hydræcia*.
 1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.
 1891. Dyar, Can. Ent., xxiii, 157, larva.

HABITAT.—Canada in September; Massachusetts; northern New York in October; Colorado.

The type should be in the collection of the American Entomological Society, but I have not found it. A specimen in the British Museum, labeled by Mr. Grote, agrees with the identification general in American collections. *Leucostigma* will be cited under *rutila*.

H. purpurifascia G. & R.

1868. G. & R., Trans. Am. Ent. Soc., 1, 341, pl. 7, f. 51, *Gortyna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 110, *Hydræcia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 19, *Ochria*.
 1874. Grt., Can. Ent., vi, 216, *Gortyna*.
 1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.

HABITAT.—Maine and Massachusetts in September and October; New York, August and September; Illinois; Colorado.

A specimen in the collection of the American Entomological Society, labeled by Mr. Grote, is probably the type, though not so marked.

H. rutila* Gn.

1852. Gn., Spec. Gen., Noct., 1, 123, pl. vi, f. 1, *Gortyna*.

1856. Wlk., C. B. Mus., Het., ix, 157, *Gortyna*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, *Hydræcia*.

1881. Grt., Bull. Geol. Surv., vi, 268, *Gortyna*.

leucostigma || Harris.

1862. Harris, Ins. Inj. to Veg., 440, *Gortyna*.

1863. Grt., Proc. Ent. Soc. Phil., ii, 432, pr. syn.

1865. Grt., Proc. Ent. Soc. Phil., iv, 325, = *cataphracta*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, = *rutila*.

1881. Grt., Bull. Geol. Surv., vi, 268, ♀ = *harrisi*.

HABITAT.—Maine; Massachusetts; New York; Illinois; Colorado. .
The Eastern States in September.

The type is in the British Museum. It differs from the *harrisi* in the same collection by the more even s. t. line.

***H. harrisi* Grt.**

1881. Grt., Bull. Geol. Surv., vi, 268, 276, *Gortyna*.

HABITAT.—Massachusetts; Maine in September.

The type is in the British Museum.

***H. speciosissima* G. & R.**

1868. G. & R., Trans. Am. Ent. Soc., 1, 342, pl. vii, f. 52, *Gortyna*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, *Hydræcia*.

1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.

HABITAT.—Rhode Island; Massachusetts in September; northern New York.

I have not seen the type of this species and have no idea where it can be.

H. marginidens* Gn.

1852. Gn., Spec. Gen., Noct., 1, 123, *Gortyna*.

1856. Wlk., C. B. Mus., Het., ix, 157, *Gortyna*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, *Hydræcia*.

1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.

HABITAT.—Northern, Eastern, and Middle States; Illinois.

The type is in the British Museum, and is the species I have been naming *limpida* in collections, including that of the National Museum. The type of *limpida*, also in the British Museum, is very dark, almost black; but with exactly the same marking as in *marginidens*. I have no doubt the two will prove varieties, as this kind of variation is not uncommon in *Gortyna*. At all events all my *limpida* labels should be changed to read *marginidens*, as I have changed them in the National Museum

H. limpida Gn.

1852. Gn., Spec. Gen., Noct., 1, 124, *Gortyna*.
 1856. Wlk., C. B. Mus., Het., ix, 157, *Gortyna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 110, *Hydrocia*.
 1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.

HABITAT.—New York; Eastern and Middle States; Massachusetts in September.

The type is in the British Museum, and has been spoken of under *marginidens*.

H. cerussata Grt.

1864. Grt., Proc. Ent. Soc. Phil., ii, 431, pl. ix, f. 1, *Gortyna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 110, *Hydrocia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 18, = *limpida*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 216, an sp. dist.
 1881. Grt., Bull. Geol. Surv., vi, 269, *Gortyna*.

• **HABITAT.**—Pennsylvania; New York; Massachusetts in September.

The type should be in the collection of the American Entomological Society; but I have not found it there. It is undoubtedly a near relative of *limpida*; but seems distinct and at all events needs critical study before definite conclusions can be reached.

H. appassionata Harv.

1876. Harv., Can. Ent., viii, 155, *Gortyna*.

HABITAT.—London, Canada.

The type of this very distinct species is in the British Museum.

H. nitela Gn.*

1852. Gn., Spec. Gen., Noct., 1, 124, *Gortyna*.
 1856. Wlk., C. B. Mus., Het., ix, 158, *Gortyna*.
 1869. Pack., Guide to Study Insects, 310, f. 241, *Gortyna*.
 1869. Riley, 1st Rept. Ins. Mo., 92, larva.
 1870. Riley, Amer. Ent., i, 22, f. 11, larva.
 1872. Le Baron, 3d Rept. Ins. Ill., 141, f. 1 and 2, larva.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 111, *Hydrocia*.
 1875. Pack., 9th Ann. Rept. Geol. Surv., 719, pl. 65, f. 6, *Gortyna*.
 1876. Riley, 8th Rept. Ins. Mo., 37, larva.
 1878. French, 7th Rept. Ins. Ills., 221, larva.
 1880. Riley, Amer. Ent., iii, 201, f. 107, *Gortyna*.
 1883. Saund., Fruit Insects, 334, f. 347, 348, larva.
 1883. Osborn, Can. Ent., xv, 174, larval habits.
 • 1884. Lint., 1st Rept. New York State Ent., 110, f. 26, larva.
 var. *nebris* Gn.*

1852. Gn., Spec. Gen., Noct., 1, 124, *Gortyna*.
 1856. Wlk., C. B. Mus., Het., ix, 157, *Gortyna*.
 1878. Graef, Bull. Bkln. Ent. Soc., i, 7, pr. var.
 1881. Riley, Papilio, i, 107, habits and var.
 1881. Riley, Index and Suppl. to Mo. Repts., 56, pr. syn.

HABITAT.—Canada to Georgia, west to the Rocky Mountains; Eastern States in September.

Types of both forms are in the British Museum. I have given an unusually large, yet far from complete, economic bibliography, because I happened to have the references convenient.

H. necopina* Grt.

1876. Grt., Can. Ent., VIII, 25, *Gortyna*.

HABITAT.—New York.

The type is in the British Museum and is like *nitela* save that it lacks the white, transverse line.

***H. serrata* Grt.**

1880. Grt., No. Amer. Ent., I, 94, *Gortyna*.

1881. Grt., Bull. Geol. Surv., VI, 269, *Gortyna*.

HABITAT.—Colorado.

The type is in the Graef collection.

Genus **GORTYNA** Ochs.

1816. Ochs., Schmett. Eur., IV, 82.

***G. sauzalitæ* Grt.**

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 216, *Ochria*.

1875. Grt., Stett. Ent. Zeit., XXXVI, 342, *Ochria*.

1881. Grt., Bull. Geol. Surv., VI, 269, *Ochria*.

purpurifascia † Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 142, *Ochria*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 216, pr. syn.

HABITAT.—California.

The type is in the British Museum, and I confess I can not see the slightest difference between it and the type of *harrisii*. There may be a clypeal modification; but I could not see it, nor could I examine closely enough to make sure it was not there. There is also a specimen of *Arzama obliquata*, marked *O. sauzalitæ*, in Mr. Grote's writing; but this is almost undoubtedly due to some accidental transposition of labels.

***G. buffaloensis* Grt.**

1877. Grt., Can. Ent., IX, 88, *Ochria*.

1881. Grt., Bull. Geol. Surv., VI, 269, *Ochria*.

HABITAT.—Buffalo, New York.

The type is in the British Museum and has all the fascies of an *Hydræcia*. I could not examine the clypeal structure sufficient to make out any modifications if such exist.

Genus **ACHATODES** Gn.

1852. Gn., Spec. Gen., Noct., I, 132.

A. zææ* Harris.

1841. Harris, Ins. Inj. to Veg., 1st ed., 319, *Gortyna*.

1862. Harris, Ins. Inj. to Veg., Flint ed., 439, pl. 7, f. 9, *Gortyna*.

1864. Grt., Proc. Ent. Soc. Phil., III, 540, *Achatodes*.

1883. Hy. Edw., Papilio III, 134, *Achatodes*.
sandir Gn.
 1852. Gn., Spec. Gen., Noct. I, 132, pl. 6, f. 4, *Achatodes*.
 1856. Wlk., C. B. Mus., Het., IX, 166, *Achatodes*.
 1860. H. Sch., Corr. Blatt, 1863, 73, *Achatodes*.
 1864. Grt., Proc. Ent. Soc. Phil., III, 540, pr. syn.

HABITAT.—Canada; Northern, Middle, Central, and Southern States; Colorado; Northern and Eastern States in July and August.

Guenée's type is in the British Museum and is correctly referred to our common species.

Genus **EUTHISANOTIA** Hbn.

1823. Hbn., Zutræge, III, 39.

E. timais Cram.*

1782. Cram., Lep. Exot., III, 148, pl. 275, *B. Phalæna*.
 1823. Hbn., Zutræge, III, 39, No. 295, f. 589–590, *Euthisanotia*.
 1816. Hbn., Verzeichniss, 211, *Xanthopastis*.
 1852. Gn., Spec. Gen., Noct., I, 116, *Glottula*.
 1856. Wlk., C. B. Mus., Het., IX, 142, *Euthisanotia*.
 1868. H. Sch., Corr. Blatt, 1868, Ins. Cuba, 8, *Euthisanotia*.
 1886. Gundlach, Cont. Ent. Cub., 303, *Euthisanotia*.
regnatrix Grt.
 1863. Grt., Proc. Ent. Soc. Phil., II, 399, pl. II, f. 4, *Philochrysa*.
 1863. Grt., Proc. Ent. Soc. Phil., II, 441, pr. syn.

HABITAT.—Florida; Atlantic coast, occasional to New York.

Genus **NOROPSIS** Gn.

1852. Gn., Spec. Gen., Noct., I, 117

N. hieroglyphica Cram.

1779. Cram., Pap. Exot., II, pl. 147, f. *D. Phalæna*.
 1856. Wlk., C. B. Mus., Het., IX, 145, *Euglyphia*.
festiva Fabr.
 1781. Fabr., Spec. Ins., II, 194, *Bombyx*.
 1787. Fabr., Mant. Ins., II, 127, 157, *Bombyx*.
 1792. Fabr., Ent. Syst., III, 1, 463, *Bombyx*.
 1793. Gmel., ed. XIII, Linn., Syst. Nat., I, 5, 2425, *Bombyx*.
 1808. Oliv., Enc. Meth., v, 85, *Bombyx*.
 1856. Wlk., C. B. Mus., Het., IX, 145, pr. syn.
elegans Hbn.
 1810. Hbn., Samml. Ex. Schmett., I, Lep. IV, Noct. f. 1–4, *Diphthera*.
 1816. Hbn., Verzeichniss, 203, *Euglyphia*.
 1856. Wlk., C. B. Mus., Het., IX, 145, pr. syn.
fastuosa Gn.
 1852. Gn., Spec. Gen., Noct., I, 117, *Noropsis*.
 1856. Wlk., C. B. Mus., Het., IX, 145, pr. syn.

HABITAT.—Texas; Florida.

This is a decidedly aberrant creature for our fauna and an intruder from a Southern clime. It has been bred in Texas, however, and must, I presume, be added. The synonymy and bibliography is after Walker.

Genus **BELLURA** Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 465..

Our good friend Walker still influences our catalogues. *Bellura* was described about 200 pages before *Arzama* in the same volume, and as the types of *Bellura* and *Arzama* are the same species, the former will have to be used, even though it was placed in the Bombycidæ and was said to be related to *Datana*.

B. gortynides Wlk.*

1865. Wlk., C. B. Mus., Het., xxxii, 465, *Bellura*.
densa Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 645, *Arzama*.

1868. H. Sch., Corr. Blatt, 1868, Ent. Cub., 16, *Arzama*.

1868. G. & R., Trans. Am. Ent. Soc., i, 340, *Arzama*.

1886. Gundlach, Cont. Ent. Cub., 325, *Arzama*.
rulnifica Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 294, *Arzama*.
melanopyga Grt.

1881. Grt., Papilio, i, 148, *Arzama*.

1881. Comstock, Papilio, i, 148, larva in lily.

HABITAT.—Canada, southward to Florida; west to the Mississippi States.

The types of Walker's species are in the British Museum, which also contains specimens of Mr. Grote's species not marked type. Where the original types are I can not say. Prof. Comstock may have that of *melanopyga*. Walker's species are exactly alike save as to degree of imperfection, and I can not make anything different out of *rulnifica*. The characters given by Mr. Grote for *melanopyga* are very feeble and are evanescent in character, a fact which he has realized to the extent of citing it a variety in his revised list of 1890.

B. diffusa Grt.

1878. Grt., Bull. Geol. Surv., iv, 179, *Arzama*.

HABITAT.—Canada; Maine.

I have not seen the type of this species.

B. obliqua Wlk.*

1865. Wlk., C. B. Mus., Het., xxxii, 428, *Edema*.

1882. Grt., Ill. Essay, 42, = *Sphida obliquata*.
obliquata G. & R.

1868. G. & R., Trans. Am. Ent. Soc., i, 339, pl. 6, f. 47, *Arzama*.

1878. Grt., Bull. Geol. Surv., iv, 179, *Sphida*.

1878. Worth., Can. Ent., x, 15, larva.

1883. Grt., Proc. Am. Phil. Soc., xxi, 157, *Sphida*.

1883. Kellicott, Can. Ent., xv, 174, larval habit.

1883. Riley, Can. Ent., xv, 176, larval habit.

1888. Brehme, Can. Ent., xx, 119, life history.

1889. Kellicott, Can. Ent., xxi, 39, larva.

1889. Brehme, Can. Ent., xxi, 78, larval habits.

1889. Johnston, Can. Ent., xxi, 79, larval habits.

1889. Moffat, Can. Ent., xxi, 99, larva.

1889. Bouteinmueller, Can. Ent., xxi, 160, larva.

HABITAT.—Canada in July; south to Florida, west to the Mississippi Valley; Colorado; Massachusetts in June; New Jersey in October, May and June.

Walker's type is in the British Museum. Mr. Grote's is in the Collection American Entomological Society. They are identical, as Mr. Grote has already stated.

Genus **NONAGRIA** Ochs.

1816. Ochs., Schmett. Eur., iv, 82.

N. permagna Grt.

1883. Grt., Papilio, III, 73, *Nonagria*.

HABITAT.—Indian River, Florida.

The type is in Mr. Neumaegen's collection.

N. laeta Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 120, *Nonagria*.

1882. Grt., Papilio, II, 95, *Nonagria*.

HABITAT.—Hoboken, New Jersey.

I have not seen the type of this species and do not know where it is. I am distinctly suspicious of species of about that date, said to have been taken at Hoboken, New Jersey. There were one or two collectors at that place who distributed extra limital species without locality labels, asserting that they were from that region. Most of them were soon detected; but I believe it will be found that Mr. Morrison has described at least two of them.

N. subflava Grt.*

1882. Grt., Papilio, II, 95, *Nonagria*.

1882. Grt., Bull. Geol. Surv., vi, 583, *Nonagria*.

HABITAT.—Illinois; Massachusetts; Maine.

I have not seen the type, which may be with Dr. Thaxter.

N. oblonga Grt.

1882. Grt., Papilio, II, 96, *Nonagria*.

HABITAT.—Kittery Point, Maine.

The type is probably with Dr. Thaxter.

N. subcarnea Kellicott.*

1883. Kellicott, Can. Ent., xv, 175, *Nonagria*.

1884. Kellicott, Bull. Bkln. Ent. Soc., vii, 86, *Nonagria*.

1884. Kellicott, Can. Ent., xvi, 170, *Nonagria*.

1885. Kellicott, Bull., Buff. Soc. Nat. Sci., v, 40, *Nonagria*.

HABITAT.—Buffalo, New York.

The types are with Dr. Kellicott.

N. inquinata Gn.1852. Gn., Spec. Gen., Noct., I, 104, *Nonagria*.1856. Wlk., C. B. Mus., Het., IX, 128, *Nonagria*.1882. Grt., Papilio, II, 94, *Nonagria*.**HABITAT.**—New York.

This species should be in the British Museum, but I failed to find it. In view of the fact that both of the other species are referable to *Senta*, rather than *Nonagria*, it is not unlikely that Guenée had before him something very like *S. defecta* Grt. The small size—21 mm., would favor this view; but it will need more material than I have at command at present to decide this.

Genus **SENTA** Steph.

1829. Steph., Ill. Br. Ent., Haust., III, 279.

S. defecta Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 29, *Senta*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, pl. I, f. 4, *Senta*.**HABITAT.**—Massachusetts; New York; Maryland; Eastern, Middle, and Central States.

The type is in the British Museum. I believe this may be found to be the *Nonagria inquinata* of Guenée.

S. onervata Gn.1852. Gn., Spec. Gen., Noct., I, 105, *Nonagria*.1856. Wlk., C. B. Mus., Het., IX, 128, *Nonagria*.1882. Grt., Papilio, II, 95, *Nonagria*.*fodiens* Gn.1852. Gn., Spec. Gen., Noct., I, 105, *Nonagria*.1856. Wlk., C. B. Mus., Het., IX, 128, *Nonagria*.1882. Grt., Papilio, II, 95, *Nonagria*.**HABITAT.**—Florida.

The types are in the British Museum and are sexes of the same species. They are not congeneric with *Nonagria typhæ*; but appear to be congeneric with *Senta defecta*. The body is quite robust, the eyes are naked, front smooth, without tubercle, and the male antennæ simple. In color the specimens are blackish, with little or no ornamentation. I never saw the like of them before.

Genus **FOTA** Grt.

1882. Grt., Can. Ent., XIV, 174.

F. armata Grt.*1882. Grt., Can. Ent., XIV, 175 et 181, *Fota*.1883. Grt., Proc. Am. Phil. Soc., XXI, 169, *Fota*.**HABITAT.**—Arizona.**F. minorata** Grt.*1882. Grt., Can. Ent., XIV, 181, *Fota*.1883. Grt., Proc. Am. Phil. Soc., XXI, 169, *Fota*.**HABITAT.**—Arizona.

Both of the above species are described out of Mr. Neumøgen's col-

lection, and Mr. Grote gave me types of each, which are now in the National Museum. The genus has little in common with those with which it is associated; but I leave it where Mr. Grote put it until critical study develops a better place for it.

Genus **PLATYSENTA** Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 28.

P. videns Gn.*

1852. Gn., Spec. Gen., Noct., 1, 78, *Leucania*.

1882. Grt., Ill. Essay, 42, = *atriciliata*.

indigens Wlk.

1857. Wlk., C. B. Mus., Het., xi, 712, † *Nonagria*.

1882. Grt., Ill. Essay, 42, pr. syn.

meskei Speyer.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 116, *Caradrina*.

1882. Grt., New List, 30, † pr. syn.

atriciliata Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 28, *Platysenta*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, pt. 1, f. 2, *Platysenta*.

HABITAT.—Massachusetts in June and July, to Florida, west to the Mississippi Valley; Colorado; Illinois in August; District of Columbia in July, August, and September.

Guenée's type is in the British Museum, and is unquestionably the same as Mr. Grote's species. Walker's type I did not see, but Mr. Grote did, and is positive in referring it to *atriciliata*. I made a regrettable error in identifying *Monodes nucicolora* Gn., with this species.

P. angustiorata Grt.*

1882. Grt., Bull. Geol. Surv., vi, 584, *Platysenta*.

HABITAT.—Colorado.

Mr. Grote gave me a specimen marked type, which is now in the National Museum.

Genus **TAPINOSTOLA** Led.

1857. Lederer, Noct. Eur., 123.

T. variana Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 432, *Tapinostola*.

HABITAT.—Detroit, Michigan.

The type should be, and probably is, in the Museum of Comparative Zoölogy at Cambridge; but I did not see it there.

T. orientalis Grt.

1882. Grt., Bull. Geol. Surv., vi, 583, *Tapinostola*.

HABITAT.—Kittery Point, Maine; Buffalo, New York.

I have seen the type specimens in Dr. Thaxter's collection, and have identified the species from Buffalo, New York. Dr. Thaxter thought it probably a variety of *variana*. Mr. Neumägen also has a "type."

Genus **OMMATOSTOLA** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., II, 112.

O. lintneri, Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., II, 112, *Ommatostola*.

HABITAT.—New York; Anglesea, New Jersey.

Types are in Dr. Lintner's collection and in the British Museum.

Genus **LEUCANIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 81.

L. pallens Linn.*1761. Linn., Fauna Suec., 1175, *Noctua*.1767. Linn., Syst. Nat., ed. XII, II, 838, *Noctua*.1759. Clk., Icones, t. 4, f. 6, *Phalana*.1781. Fabr., Spec. Ins., II, 214, *Noctua*.1787. Fabr., Mant. Ins., II, 139, *Noctua*.1816. Hbn., Verzeichniss, 241, *Leucania*.1852. Gn., Spec. Gen., Noct., I, 92, *Leucania*.1856. Wlk., C. B. Mus., Het., IX, 91, *Leucania*.1875. Speyer, Stett. Ent. Zeit., XXXVI, 112, *Leucania*.

HABITAT.—Canada; United States generally, except Southern States, June to September.

The bibliography of older and European authors is incomplete and reference should be had to Staudinger and Walker for other citations. In American literature I have found nothing worthy of remark. I have seen this species, or something very closely allied to it, from California.

L. oxygale Grt.*1881. Grt., Can. Ent., XIII, 14, *Heliophila*.

HABITAT.—Colorado.

The type is in the British Museum. I have a specimen carefully compared with it. Another specimen, also marked type, is in the Tupper collection.

L. prægracilis Grt.1877. Grt., Bull. Geol. Surv., III, 119, *Heliophila*.

HABITAT.—Idaho, July 6; Colorado; New Mexico.

I have not seen the type of this species, and do not know certainly where it is. In the Cambridge collection is a specimen marked *Heliophila gracillima* type; but I find no such species described. Is it possible that Mr. Grote's description was intended for this insect? It is not unlikely, for the description applies fairly well. Mr. Thaxter has marked it "*bicolorata*" and the two are very nearly related if not identical.

L. bicolorata Grt.1881. Grt., Papilio, I, 154, *Heliophila*.

HABITAT.—Tucson, Arizona; Colorado; New Mexico.

The type is with Mr. Neumögen, and is, as already suggested, a close ally of the preceding.

L. patricia Grt.1880. Grt., Bull. Bñh. Ent. Soc., III, 46, *Heliophila*.

HABITAT.—Colorado; Las Vegas, New Mexico.

The type is in the Tepper collection. Mr. Meeske collected it in some numbers at Las Vegas, New Mexico. It does not look like *Leucania* at first sight, from its slender form and the clear white median stripe.

L. pertracta Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 120, *Heliophila*.

HABITAT.—Pennsylvania.

The type is in Mr. Strecker's collection.

L. rubripennis G. & R.*1870. G. & R., Trans. Am. Ent. Soc., III, 179, pl. 2, f. 77, *Leucania*.

HABITAT.—Texas in August.

A specimen marked "Type" is in the British Museum.

L. rufostigma Pack.1866. Pack., Proc. Bost. Soc. N. H., XI, 36, *Leucania*.

HABITAT.—Caribou Island; Labrador.

The type is probably in the Cambridge collection. I have no note of seeing it while at Salem; but the material was then in such a confused shape that it was easy to overlook specimens.

L. albilinea Hbn.*

1816. Hbn., Samml. Ex. Schmett., 25, ff., 337, 338.

1816. Hbn., Verzeichniss, 241, *Leucania*.1852. Gn., Spec. Gen., Noct., I, 89, *Leucania*.1856. Wlk., C. B. Mus., Het., IX, 99, *Leucania*.

1877. Riley, 9th Rept. Ins. Mo., 50, f., 14, 15, all stages.

1880. Grt., Can. Ent., XII, 116, *Leucania*.*diffusa* Wlk.1856. Wlk., C. B. Mus., Het., IX, 94, *Leucania*.

1882. Grt., Ill. Essay, 42, pr. syn.

moderata Wlk.1856. Wlk., C. B. Mus., Het., IX, 114, *Leucania*.*harveyi* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 9, pl. I, f. 14, *Leucania*.1876. Harv., Bull. Buff. Soc. Nat. Sci., III, 8, *Leucania*.

1880. Grt., Can. Ent., XII, 116, an sp. dist.?

HABITAT.—Nova Scotia; Canada, in August; United States east of the Rocky Mountains; Northern and Middle States in August; Texas in March and April; Colorado; New Mexico.

The types of *diffusa*, *moderata*, and *harveyi* are all in the British Museum, and all refer to *albilinea*, or what Guenée has identified as such—correctly, I think. The economic bibliography is large.

L. ligata Grt.*1875. Grt., Trans. Am. Ent. Soc., v, 115, *Heliophila*.1879. Strk., Rept. Chief Eng., 1878-'79, v, p. 1862, *Leucania*.**HABITAT.**—Texas in March to November; Colorado, July 31; Florida in March.

The type is in the British Museum.

L. dia Grt.*1879. Grt., Can. Ent., xi, 29, *Heliophila*.1882. Grt., Ill. Essay, 56, pl. II, f. 19, *Heliophila*.**HABITAT.**—California.

The type is in the Bailey collection.

L. extincta Gn.1852. Gn., Spec. Gen., Noct., i, 79, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 94, *Leucania*.*linia* Gn.1852. Gn., Spec. Gen., Noct., i, 81, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 95, *Leucania*.

1891. Smith, List Lepidoptera, 46, pr. syn.

scirpicola Gn.1852. Gn., Spec. Gen., Noct., i, 84, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 96, *Leucania*.

1891. Smith, List Lepidoptera, 46, pr. syn.

amygdalina Harv.1878. Harv., Can. Ent., x, 57, *Heliophila*.**HABITAT.**—Maine to Texas; Florida.

All the types are in the British Museum and without any question refer to one species only. *Insueta*, on the other hand, is a distinct species.

L. multilinea Wlk.*1856. Wlk., C. B. Mus., Het., ix, 97, *Leucania*.1875. Grt., Proc. Ac. Nat. Sci., 1875, 419, = *commoides*.*lapidaria* Grt.1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 419, *Heliophila*.**HABITAT.**—Canada; New York in July and August.

Both types are in the British Museum and refer to the same species. Mr. Grote referred *multilinea* as a synonym of *commoides* on the faith of a specimen determined by Walker in a Canadian collection; but Walker's determinations, even of his own species, are absolutely untrustworthy.

L. phragmatidicola Gn.*1852. Gn., Spec. Gen., Noct., i, 89, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 97, *Leucania*.*var texana* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 211, *Heliophila*.

HABITAT.—Canada in August, to Texas; United States east of the Rocky Mountains; Colorado; New Mexico; Texas, March, April, July, September, October; New York in June to September.

The type of the species is in the British Museum and I have a carefully compared specimen. I have not seen Mr. Morrison's variety, which may be another species, probably represented in the National Museum.

L. juncicola* Gn.

1852. Gn., Spec. Gen., Noct., 1, 83, *Leucania*.

1856. Wlk., C. B. Mus., Het., IX, 96, *Leucania*.
adjuta Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 158, *Heliophila*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 8, *Heliophila*.

HABITAT.—Alabama; Texas in March.

Mr. Grote's type is in the British Museum, where there is also a specimen named *juncicola*, apparently determined by Guenée. Guenée credits the species to Boisduval, but describes it himself for the first time. The specimen agrees well with the description and may, I think, be fairly considered as representative of *juncicola* which, then, is the same as *adjuta*.

***L. farcta* Grt.**

1881. Grt., Can. Ent., XIII, 15, *Heliophila*.

HABITAT.—California.

The type is in the British Museum. I have a compared specimen almost exactly like it.

L. insueta* Gn.

1852. Gn., Spec. Gen., Noct., 1, 81, *Leucania*.

1856. Wlk., C. B. Mus., Het., IX, 95, *Leucania*.

1877. Grt., Can. Ent., IX, 28, = *commoides*.
adonea Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 159, *Heliophila*.

HABITAT.—Nova Scotia; Canada in July; New York, June to August; Colorado.

Both the types are in the British Museum and refer to the same species. *Insueta* is a somewhat darker form; but not otherwise different. Mr. Grote's reference to *commoides* was based on determinations made by Walker, and that was a very unsafe basis. I have specimens compared with the types.

L. commoides* Gn.

1852. Gn., Spec. Gen., Noct., 1, 86, *Leucania*.

1856. Wlk., C. B. Mus., Het., IX, 96, *Leucania*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 113, *Leucania*.

HABITAT.—Nova Scotia; Canada; New York, June to August; Wisconsin; Minnesota; Illinois; Colorado; New Mexico; Florida in March.

The type is in the British Museum and is the species so named in American collections.

L. flabilis Grt.

1881. Grt., Can. Ent., XIII, 15, *Heliophila*.

HABITAT.—Long Island, New York.

Types are in the Tepper collection and in the British Museum. The species was described from material taken by Mr. Tepper.

L. rimosa Grt.*

1882. Grt., Can. Ent., XIV, 216, *Heliophila*.

HABITAT.—Kittery Point, Maine.

The type is with Dr. Thaxter.

L. unipuncta Haw.*

1810. Haw., Lep. Britt., II, 177, *Noctua*.

1829. Steph., Ill. Brit. Ent., Haust., III, 80, *Noctua*.

1862. Flint, in Harris, Inj. Ins., 627, f. 274, 275, 276, *Leucania*.

1864. Grt., Proc. Ent. Soc. Phil., III, 540, *Leucania*.

1870. Riley, 2d Rept. Ins. Mo., 37, ff. 11, 14–16, *Leucania*.

1871. Riley, Amer. Ent., I, 215, ff. 152–154, *Leucania*.

1876. Riley, 8th Rept. Ins. Mo., 22, 184, 215, *Leucania*.

1883. Riley, 3d Rept. U. S. Ent. Comm., 89–156, *Leucania*.

extranea Gn.

1852. Gn., Spec. Gen., Noct., I, 77, *Leucania*.

1856. Wlk., C. B. Mus., Het., IX, 93, *Leucania*.

HABITAT.—Canada to Florida and Texas, west to the Rocky Mountains; Colorado; New Mexico; throughout the season.

For the full bibliography of this insect to 1881, reference should be had to the Third Report of the U. S. Entomological Commission, where more than eight pages of titles are given. Were the bibliography since that time collected with equal completeness it would fill eight pages more.

L. subpunctata Harv. *

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 8, *Heliophila*.

HABITAT.—Texas in March.

The type is in the British Museum. I have a specimen carefully compared with it.

L. pilipalpis Grt.

1875. Grt., Proc. Bost. Soc. N. H., XVIII, 415, *Heliophila*.

HABITAT.—Apalachicola, Florida.

I have seen the type in Dr. Thaxter's collection. It is a peculiar and very distinct species, which I have not had since.

L. pseudargyria Gn.*

1852. Gn., Spec. Gen., Noct., I, 74, *Leucania*.

1856. Wlk., C. B. Mus., Het., IX, 77, *Mythimna*.

1874. Caulfield, Can. Ent., VI, 132, *Leucania*, larva.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 113, *Leucania*.

1881. French, Can. Ent., XIII, 24, larva.

rar obusta Gn.1852. Gn., Spec. Gen., Noct., 1, 74, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 77, *Mythimna*.

1882. Grt., Ill. Essay, 40, ♀ pr. syn.

callida Grt.

1882. Grt., New List, 30, in note, var. pr.

HABITAT.—Canada in July and August to Texas; east of Rocky Mountains; Colorado; New Jersey in April and June; New York, May to August.

Guenée's types are in the British Museum. *Obusta* is undoubtedly the red form of *pseudargyria*, and just exactly what Mr. Grote named *callida*.

L. ebriosa Gn.1852. Gn., Spec. Gen., Noct., 1, 74, pl. 3 f. 1, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 70, *Mythimna*.1882. Grt., Ill. Essay, 40, *Mythimna*.

HABITAT.—"Am. Sept."

A curious species to be an American insect. The eyes are hairy, antennæ serrate and bristled, "brush-like," the wings short, resembling *Scopelosoma*, color carmine red. If from America at all, it is probably from Florida, of Doubleday's material.

Genus **ZOSTEROPODA** Grt.

1874. Grt., Bull. Buff. Nat. Sci., II, 67.

Z. hirtipes Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 68, *Zosteropoda*.1875. Grt., Can. Ent., VII, 25, *Zosteropoda*.1882. Grt., Ill. Essay, 56, pl. 2, f. 20, *Zosteropoda*.

HABITAT.—California, March, April, July, and September.

A type is in the Edwards collection. Another is in the British Museum.

Genus **UFEUS** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 101.

U. sagittarius Grt.1883. Grt., Papilio, III, 31, *Ufeus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 170, *Ufeus*.

HABITAT.—California.

The type is in the Neumagen collection.

U. plicatus Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 102, *Ufeus*.1873. Grt., Proc. Bost. Soc. Nat. Hist., XVI, 241, *Ufeus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 170, *Ufeus*.

HABITAT.—Canada; Pennsylvania; Colorado; California.

The type should be in the collection of the American Entomological Society, but I have not found it there.

U. unicolor Grt.*1878. Grt., Bull. Geol. Surv., IV, 179, *Ufeus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 170, *Ufeus*.

HABITAT.—Illinois; Colorado.

The type is in the British Museum.

U. satyricus Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 101, pl. 3, f. 4, *Ufeus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 170, *Ufeus*.

HABITAT.—Canada in July; New York; Pennsylvania; Illinois, February.

The type is in Dr. Lintner's collection.

Genus **PTEROSCIA** Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 155.

P. atrata Morr.1874. Morr., Proc. Bost. Soc. N. H., XVII, 156, *Pteroscia*.

HABITAT.—Mount Washington, N. H., July 5 and 7.

The type is in the British Museum from the Grote collection. It is a roughly clothed, dull, smoky-brown species, with broad wings and simple male antennæ. The only obvious marking is a dentate, pale, exterior transverse line. I had not seen it before.

Genus **SCOLECOCAMPA** Gn.

1852. Gn., Spec. Gen., Noct., 1, 131.

S. liburna Geyer.*1823. Geyer, Zuträge, 482, ff. 963. 964, *Clytie*.1858. Wlk., C. B. Mus., Het., XIV, 1364, *Pseudophia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 20, *Scolecocampa*.1875. Grt., Proc. Bost. Soc. N. H., XVIII, 415, *Scolecocampa*.1881. Grt., Can. Ent., XIII, 91, *Scolecocampa*.

1883. Hy. Edw., Papilio, III, 134, larva.

ligni Gn.1852. Gn., Spec. Gen., Noct., 1, 131, pl. 6, f. 3, *Scolecocampa*.1856. Wlk., C. B. Mus., Het., IX, 166, *Scolecocampa*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 20, pr. syn.

HABITAT.—Canada to Florida; east of the Rocky Mountains; Eastern and Northern States, in July.

The larva lives in decaying chestnut and oak stumps, and the range given embraces only such portions of it as afford the food plants. Guenée's types are at the Jardin des plantes and in the Boisduval collection with M. Oberthür. I did not see the specimen in the Paris Museum.

Genus **EUCALYPTERA** Morr.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 104,

E. bipuncta Morr.*1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 104, *Eucalyptera*.1878. Grt., Bull. Geol. Surv., IV, 179, *Scolecocampa*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Scolecocampa*.1882. Smith, Bull. Bkln. Ent. Soc., V, 6, *Eucalyptera*.1883. Smith, Can. Ent., XV, 230, *Eucalyptera*.

HABITAT.—Massachusetts to Florida, along the coast.

The type is in the Tepper collection.

E. obscura Grt.1883. Grt., Can. Ent., xv, 7, *Scolecocampa*.1890. Grt., Revised Check List, 22, *Eucalyptera*.**HABITAT.**—Arizona.

The type is in the Neumägen collection.

Genus **DORYODES** Gn.

1857. Gn., Spec. Gen., Phal., II, 233.

D. bistrialis Geyer.*1823. Geyer, Zuträge, 388, ff. 775, 776, *Agriphila*.1878. Grt., Bull. Geol. Surv., IV, 179, *Doryodes*.1881. Grt., Can. Ent., XIII, 91, *Doryodes*.*acutaria* H-Sch.1856. H-Sch., Lep. Ex., Suppl., 74, f. 447, *Ligia*.1857. Gn., Spec. Gen., Phal., II, 233, pl. 17, f. 6, *Doryodes*.1858. Wlk., C. B. Mus., Het., XVI, 73, † *D. acutalis*.1860. Clem., Proc. Ac. Nat. Sci. Phil., 1860, 251, *Doryodes*.

1878. Grt., Bull. Geol. Surv., IV, 179, pr. syn.

divisa Wlk.1863. Wlk., C. B. Mus., Het., XXVII, 187, *Thermma*.*promptella* Wlk.1863. Wlk., C. B. Mus., Het., XXVII, 196, *Tunza*.**HABITAT.**—Eastern, Middle, and Western States; Florida; Maine and Massachusetts, in August; Kansas in September.

The Walker types are in the British Museum, and were described as Crambids, while Guenée considered the species Geometrid.

D. spadaria Gn.1857. Gn., Spec. Gen., Phal., II, 234, *Doryodes*.1862. Wlk., C. B. Mus., Het., XXIV, 1148, *Doryodes*.**HABITAT.**—Florida.

I have not seen the type; nor have I made any effort to identify the species.

Genus **PHIPROSOPUS** Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 90.

P. callitrichoides Grt.*1872. Grt., Trans. Am. Ent. Soc., IV, 90, *Phyprosopus*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 170, *Sudariophora*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 29, *Sudariophora*.1876. Grt., Can. Ent., VIII, 205, *Phyprosopus*.*acutalis* † Wlk.1858. Wlk., C. B. Mus., Het., XVI, 73, *Doryodes*.

1872. Grt., Trans. Am. Ent. Soc., IV, 91, pr. syn.

nasutaria Zell.1872. Zell., Verh. k. k. Zool.-bot. Ges., 1872, 490, t. 2, f. 11, *Sudariophora*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 170, pr. syn.

HABITAT.—New York to Texas, in May.Mr. Grote's type is in the British Museum, and so, probably, is Zeller's, though I did not see the latter. Mr. Grote was quite correct in citing Walker's *acutalis* to this species.

Genus **AMOLITA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 158.

A. fessa Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 158, *Amolita*.

HABITAT.—Massachusetts, in July, to Texas; Colorado; District of Columbia, in June; Florida, in March.

The type is in the British Museum.

Genus **CILLA** Grt.

1880. Grt., No. Am. Ent., I, 100.

C. distema Grt.*1880. Grt., No. Am. Ent., I, 100, *Cilla*.

HABITAT.—Texas, May to August.

The type is in the British Museum.

Genus **BALSA** Wlk.

1860. Wlk., Can. Nat. and Geol., v, 250.

B. malana Fitch.*1856. Fitch, 1st and 2d Rept. Ins. N. Y., 244, pl. III, f. 5, *Brachytania*.1872. Zell., Verh. k. k. Zoöl.-bot. Ges., XXII, 454, *Nola*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 169, *Nolophana*.

1883. Saund., Fruit Insects, 101, f. 98, larva.

1883. Grt., Proc. Am. Phil. Soc., XXI, 159, *Nolophana*.
obliquifera Wlk.1860. Wlk., Can. Nat. and Geol., v, 251, *Balsa*.

1877. Grt., Can. Ent., IX, 29, pr. syn.

HABITAT.—Canada, in July, to Georgia; Wisconsin; Central States; New York, in June to August.

Mr. Grote in Can. Ent., IX, 29, cites *Balsa obliquifera* Wlk., as a synonym of this species after an examination of the type in the collection of the Entomological Society of Ontario. Mr. Walker has thus given us three generic names for this genus—*Balsa*, *Gargaza*, and *Cutina*, all of which antedate *Nolophana* Grote.**B. triquetrana** Fitch.1856. Fitch, 1st and 2d Rept. Ins. N. Y., 244, *Brachytania*.1872. Zell., Verh. k. k. Zoöl.-bot. Ges., XXII, 457, *Nola*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 169, *Nolophana*.

HABITAT.—Middle States.

B. tristrigella Wlk.*1865. Wlk., C. B. Mus., Het., XXXV, 1734, *Gargaza*.
zelleri Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 169, *Asisyra*.1883. Grt., Proc. Am. Phil. Soc., XXI, 159, *Nolophana*.
malana † Zell.1872. Zell., Verh. k. k. Zoöl.-bot. Ges., XXII, 454, *Nola*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 169, = *zelleri*.

6048—No. 44—13

HABITAT.—Massachusetts in April and May; New York, in June and August, to Texas.

Walker's type is in the British Museum. In the Grote collection are three specimens labeled *zelleri* by Mr. Grote, not types, which agree with the type of *tristrigella*. The locality of the latter is "unknown."

B. labecula Grt.

1880. Grt., Can. Ent., XII, 217, *Nolophana*.

HABITAT.—New York to Texas.

The type is in the British Museum.

Genus **CATABENA** Wlk.

1865. Wlk., C. B. Mus., Het., XXXII, 631.

C. lineolata Wlk.*

1865. Wlk., C. B. Mus., Het., XXXII, 631, *Catabena*.

miscellus Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 181, *Adipsophanes*.

1880. Coquillett, No. Amer. Ent., I, 52, larva.

HABITAT.—Canada in May and July; New York in May and July, to California in May and July.

Both the types are in the British Museum, and refer to the same species. Walker's species was given as "locality unknown."

C. terminellus Grt.

1883. Grt., Can. Ent., XV, 132, *Adipsophanes*.

HABITAT.—Texas.

The type is with Mr. Neumægen.

Carvanca trisecta Wlk., which is interpolated here in my List of *Lepidoptera*, is *Crambus interminellus* Wlk. Both the types are in the British Museum.

Belonging here, and probably a species of *Nolophana*, is *Cutina albopunctella* Wlk., C. B. Mus., XXXV, 1735, 1866, described as a Pyralid. The species is the generic type, and the description as applied to the specimen is a wonderful production. While I feel quite certain that the specimen is a *Nolophana* or *Balsa*, I would not dare to risk a guess at the species at present.

Genus **CRAMBODES** Gn.

1852. Gn., Spec. Gen., Noct., II, 152,

C. talidiformis Gn.*

1852. Gn., Spec. Gen., Noct., II, 152, pl. 7, f. 12, *Crambodes*,

1857. Wlk., C. B. Mus., Het., XI, 661, *Crambodes*.

1879. Coquillett, No. Amer. Ent., I, 5, larva,

1883. Hy. Edw., Papilio, III, 135, larva.

conjugens Wlk.

1856. Wlk., C. B. Mus., Het., IX, 119, *Carvanca*.

1865. Wlk., C. B. Mus., Het., XXXII, 762, pr. syn.

HABITAT.—Canada in May, June, and July; Northern, Eastern, Middle, and Central States May to July; Colorado.

The types are in the British Museum. Walker has himself referred his species to the synonymy. His *Carvanca trisecta*, C. B. Mus., Het., ix, 119, is *Crambus interminellus*, also described by him.

Genus **FOTELLA** Grt.

1882. Grt., Can. Ent., xiv, 181.

F. notalis Grt.

1882. Grt., Can. Ent., xiv, 181, *Fotella*.

HABITAT.—Arizona.

The type is in Mr. Neumegen's collection.

Genus **CARADRINA** Ochs.

1816. Ochs., Schmett. Eur., iv, 80.

C. tarda Gn.

1852. Gn., Spec. Gen., Noct., i, 243, *Caradrina*.

1856. Wlk., C. B. Mus., Het., x, 292, *Caradrina*.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 121, *Caradrina*.

HABITAT.—"North America;" West Virginia.

Guenée's species was described from Boisduval's collection, and the type is now with M. Oberthür, at Rennes. The specimen identified by Mr. Morrison is in the Meyer collection, where I have probably seen it without noting. I can not say, of course, whether the identification is correct.

C. miranda Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 11, 169, *Caradrina*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 114, *Caradrina*.

HABITAT.—Middle and Central States June to August; Colorado; Utah in June; California in July.

I have not seen the type. The specimens in the British Museum, though from the Grote collection, have no type label.

C. meralis Morr.

1875. Morr., Can. Ent., vii, 215, *Caradrina*.

bilunata Grt.

1877. Grt., Can. Ent., ix, 199, *Caradrina*.

1880. Grt., Bull. Bkln. Ent. Soc., iii, 39, pr. syn.

1880. Grt., Can. Ent., xii, 187, pr. syn.

HABITAT.—Northern and Eastern States; Maine; Massachusetts; New Mexico.

The type of *meralis* is in the Tepper collection; that of *bilunata* is with Dr. Thaxter.

C. derosa Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 121, *Caradrina*.

HABITAT.—New Jersey.

The type is in the Tepper collection. I have not recognized it among the material taken by the New Jersey collectors.

C. multifera Wlk.*1856. Wlk., C. B. Mus., Het., x, 293, *Caradrina*.1869. Beth., Can. Ent., i, 85, *Caradrina*.*adicularia* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 145, *Segitia*.1876. Grt., Can. Ent., viii, 188, = *cubicularis*.1878. Lintner, Ent. Cont., iv, 89, *Caradrina* dist. *cubicularis*.

1882. Grt., Ill. Essay, 46, pr. syn.

HABITAT.—Nova Scotia; Canada in July and August; Maine; New York, August, September; New Jersey; District of Columbia; Illinois; Minnesota.

Walker's type is in the British Museum and is our common form. Mr. Morrison's type I have not seen, nor do I know where it is. Dr. Lintner, in 1878, writes as though from a positive identification of Morrison's species, and I have no doubt the reference is correct.

C. subaquala Harv.1878. Harv., Can. Ent., x, 57, *Caradrina*.**HABITAT.**—Texas.

The type is in the British Museum.

C. conviva Harv.*1874. Harv., Can. Ent., viii, 6, *Caradrina*.**HABITAT.**—Texas in November.

The type is in the British Museum.

C. fragosa Grt.1883. Grt., Papilio, iii, 76, *Caradrina*.**HABITAT.**—Arizona.

The type is in Mr. Neumøgen's collection.

C. extimia Wlk.1865. Wlk., C. B. Mus., Het., xxxii, 687, *Caradrina*.*cirica* Grt.1883. Grt., Papilio, iii, 74, *Caradrina*.**HABITAT.**—Colorado; California; Vancouver; Oregon.

Walker's type is in the British Museum and Mr. Grote's is in the Neumøgen collection. They are specifically identical.

Genus **AMPHIPYRA** Ochs.

1816. Ochs., Schmett. Eur., iv, 70.

I follow Standinger and the continental entomologists generally in using *Amphipyra* instead of *Pyrophila* Hbn., Verzeichniss, 208. Though bearing date the same year, 1816, Hübner's book was not published until 1818 at least, and as both are catalogue names the earliest must stand. The Tentamen, of course, is not considered in this argument.

A. tragopoginis Linn.*

1761. Linn., Fn. Suec., 1189, *Noctua*.
 1767. Linn., Syst. Nat., ed. XII, 855, *Noctua*.
 1781. Fabr., Spec. Ins., II, 273, *Noctua*.
 1787. Fabr., Mant. Ins., II, 177, *Noctua*.
 1793. Fabr., Ent. Syst., III, 2, 112, *Noctua*.
 1793. Gmel., ed. XIII, Linn. Syst. Nat., V, 2573, *Noctua*.
 1800. Hbn., Eur. Schmett., IV, t. 8, f. 40, *Noctua*.
 1816. Hbn., Verzeichniss, 209, *Scotophila*.
 1825. Tr., Schmett. Eur., V, 277, *Amphipyra*.
 1852. Gn., Spec. Gen., Noct., II, 415, *Amphipyra*.
 1858. Wlk., C. B. Mus., Het., XIII, 1017, *Amphipyra*.
 1870. Beth., Can. Ent., II, 73, *Amphipyra*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, *Pyrophila*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 168, *Amphipyra*.
repressus Grt.
 1871. Grt., Can. Ent., III, 192, *Agrotis*.
 1871. Saund., Can. Ent., III, 193, larva.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, pr. syn.

HABITAT.—Canada to Pennsylvania, west to the Mississippi; July and August.

A. glabella Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 153, *Pyrophila*.
 1878. Grt., Bull. Geol. Surv., IV, 180, *Pyrophila*.

HABITAT.—Pennsylvania; Illinois; Arizona; Nebraska; California; Colorado.

I do not know where the type is to be found at present.

A. triquetra Grt.

1883. Grt., Papilio, III, 78, *Pyrophila*.

HABITAT.—Arizona.

The type is with Mr. Neumegen.

A. pyramidoides Gn.*

1852. Gn., Spec. Gen., Noct., II, 413, *Amphipyra*.
 1857. Wlk., C. B. Mus., Het., XIII, 1018, *Amphipyra*.
 1864. Grt., Proc. Ent. Soc. Phil., III, 86, *Amphipyra*.
 1871. Riley, 3d Rept. Ins. Mo., 72, f. 31, 32, larva.
 1871. Riley, Am. Ent., II, 26, f. 23, *Amphipyra*.
 1874. Saund., Can. Ent., VI, 27, larva.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, *Pyrophila*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 168, *Amphipyra*.
 1875. Saund., Can. Ent., VII, 14, *Amphipyra*.
 1875. Thaxter, Psyche, I, 106, *Pyrophila*.
 1875. Riley, Psyche, I, 152, *Amphipyra*.
var. inornata Grt.
 1864. Grt., Proc. Ent. Soc. Phil., III, 86, *Amphipyra*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, pr. var.
ab. conspersa Riley.
 1871. Riley, 3d Rept. Ins. Mo., 75, *Amphipyra*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 22, ab. pr.
 1881. Riley, Ind. and Suppl. to Mo. Repts., 57, pr. var.

HABITAT.—United States east of the Rocky Mountains; Colorado; British Columbia, July to October.

Typical specimens are in the British Museum. I have not seen the type of Mr. Grote's variety; that described by Prof. Riley is in the National Museum.

Genus **ANORTHODES** Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 114.

A. prima Smith.*

1891. Smith, Trans. Am. Ent. Soc., XVIII, 115, *Anorthodes*.

HABITAT.—Florida, May; District of Columbia, May and September; Ohio.

The type is in the National Museum. I have an uneasy suspicion that this may prove to be *Caradrina tarda* Gn. The description applies fairly well, as I have recently found, but the species is certainly no *Caradrina*.

Genus **ORTHODES** Gn.

1852. Gn., Spec. Gen., Noct., I, 371.

A monographic revision of the species is in the Proc. U. S. Nat. Mus., XII, 469. The synonymy given by me there has been modified by an examination of the types in the British Museum.

O. crenulata Butler.*

1890. Butler, Ann. & Mag. Nat. Hist., 6 ser., VI, 97, *Dyschorista infirma* var., Gn.

1852. Gn., Sp. Gen., Noct., I, 375, *Orthodes*.

1856. Wlk., C. B. Mus., Het., x, 446, *Orthodes*.

1874. Morr., Can. Ent., VI, 252, *Orthodes*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 9, *Orthodes*.

HABITAT.—Canada in June; New England and Middle States in July and August; Missouri; Texas in March, April, and May; Colorado.

Mr. Butler was perfectly right in separating our North American species. Guenée described his type from Brazil, and as var. *A*, mentions a specimen from New York. This is like what is in all American collections, as *infirma*; but is specifically distinct from the Brazilian specimens. Mr. Butler's type is in the British Museum.

If Lederer's description of his genus *Dyschorista* is entitled to any weight at all, it is impossible that *crenulata* can be referred to it. Mr. Butler has allowed himself to be misled by a certain habital resemblance.

O. cynica Gn.*

1852. Gn., Spec. Gen., Noct., I, 375, *Orthodes*.

1856. Wlk., C. B. Mus., Het., x, 443, *Orthodes*.

1874. Morr., Can. Ent., VI, 252, *Orthodes*.

candens Gn.

1852. Gn., Spec. Gen., Noct., I, 376, *Orthodes*.

1856. Wlk., C. B. Mus., Het., x, 444, † an sp. dist. præc.

1874. Morr., Can. Ent., vi, 252, pr. syn.

tecta Wlk.

1865. Wlk., C. B. Mus., Het., xxxiii, 714, *Orthosia*.

HABITAT.—Northern and Central United States, May to July; Canada in June and July; Nova Scotia; Colorado.

The types are all in the British Museum, and refer to the same species. Curiously enough Walker, while referring both *nimia* and *candens* Gn., as probable synonyms of *cynica*, redescribed a very obvious specimen of *cynica* as *Orthosia tecta*.

O. vecors Gn.*

1852. Gn., Spec. Gen., Noct., i, 376, *Orthodes*.

enervis Gn.

1852. Gn., Spec. Gen., Noct., iii, 420, *Orthodes*.

1856. Wlk., C. B. Mus., Het., x, 444, † = *cynica*.

1874. Morr., Can. Ent., vi, 253, *Pseudorthodes*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 471, *Orthodes*.

nimia Gn.

1852. Gn., Spec. Gen., Noct., i, 376, *Orthodes*.

1856. Wlk., C. B. Mus., Het., x, 443, an var. *cynica*?

1874. Morr., Can. Ent., vi, 252, = *cynica*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 471, = *cynica*.

togata Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 672, *Apamea*.

relata Wlk.

1860. Wlk., Can. Nat. and Geol., v, 256, † *Celræna*.

prodens Wlk.

1856. Wlk., C. B. Mus., Het., x, 453, † *Cerastis*

griseocincta Harv.

1873. Harv., Bull. Buff. Soc. Nat. Sci., ii, 120, *Orthodes*.

1874. Morr., Can. Ent., vi, 253, pr. var.

1889. Smith, Proc. U. S. Nat. Mus., xii, 472, *Orthodes*.

nitens Grt.

1883. Grt., Papilio, iii, 31, *Orthodes*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 472, pr. syn.

HABITAT.—District of Columbia in August; northward to Nova Scotia, west to the Mississippi Valley; Wisconsin; Canada and Massachusetts in July.

The type of *nitens* is in Mr. Neumœgen's collection, that of *griseocincta* I have not seen; all the others save *relata* are in the British Museum. *Velata* is in the Coll. Ent. Soc. of Ontario. The species is a variable one, but recognizable by the characters pointed out by me. *Griseocincta* is in the National Museum from the Meske collection, and is an aberration rather than a variety. The form *nitens* is simply a somewhat smaller and smoother type of the same thing. Guenée changed his name *vecors* to *enervis* in the index, because he had already employed *vecors* for a *Perigæa*. His substituted name has been used heretofore, but I do not think the species are closely enough related to make the change necessary. Both of Walker's species in the British Museum

are typical specimens of *vecors*. *Velata*, the type of which was kindly sent me by Mr. Moffat, is a badly rubbed specimen, more like *nitens* in appearance.

O. virgula Grt.

1883. Grt., Papilio, III, 76, *Tæniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 473, *Orthodes*.

HABITAT.—Arizona; Colorado.

The type is in Mr. Neumægen's collection.

O. irrorata Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 478, *Orthodes*.

HABITAT.—Washington; British Columbia.

Types are in the Graef, Neumægen, and Edwards collections.

O. puerilis Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 64, *Mamestra*.

1879. Grt., Can. Ent., XI, 26, *Graphiphora*.

1881. Grt., Can. Ent., XIII, 126, *Tæniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 474, *Orthodes*.

HABITAT.—California.

The type is in the British Museum. A specimen marked "type," by Mr. Morrison, is in the National Museum.

O. agrotiformis Grt.

1881. Grt., Can. Ent., XIII, 14, *Graphiphora*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 489, *Tæniocampa*.

HABITAT.—Colorado.

The types, two females, are in the British Museum, and are best referred to *Orthodes* until the male is known. The species seems a good one.

Genus **HIMELLA** Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 200.

1889. Smith, Proc. U. S. Nat. Mus., XII, 467.

H. contrahens Wlk.*

1860. Wlk., Can. Nat. and Geol., v, 255, † *Celæna*.
thecata Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 59, *Mamestra*.

1880. Grt., Can. Ent., XII, 186, *Graphiphora*.

1881. Grt., Can. Ent., XIII, 126, *Tæniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 468, *Himella*.
contrahens Grt.

1878. Grt., Bull. U. S. Geol. Surv., IV, 180, *Graphiphora*.

1881. Grt., Can. Ent., XII, 186, syn. *thecata*.

HABITAT.—Nova Scotia; Canada in July; Maine; New Hampshire in July; northern New York; Nebraska; Colorado; New Mexico.

In describing *Graphiphora contrahens* n. sp., Mr. Grote refers to the fact that he had seen a specimen labeled *contrahens* by Walker; but he seems not to have known that it had been described, and this would

also account for his referring the name as a synonym of Morrison's species. To the courtesy of Mr. Moffat I owe an opportunity of examining Walker's type from the collection of the Entomological Society of Ontario, and I find it the same as Mr. Grote's species, the type of which is in the British Museum, and also like Mr. Morrison's species, the type of which is in the Tepper collection.

H. intractata Morr.*

1874. Morr., Proc. Bost. Soc., N. H., xvii, 160, *Tæniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 468, *Himella*.

fidelis Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 201, *Himella*.

1879. Grt., Can. Ent., xi, 27, *Graphiphora*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 468, pr. syn.

HABITAT.—New York; Massachusetts; Missouri; Illinois.

Mr. Morrison's type is in the Tepper collection. Mr. Grote's is in the British Museum. The two are alike.

Genus **CROCIGRAPHA** Grt.

1875. Grt., Can. Ent., vii, 57.

1889. Smith, Proc. U. S. Nat. Mus., xii, 469.

C. normani Grt.*

1874. Grt., Can. Ent., vi, 115, *Perigrapha*.

1874. Morr., Can. Ent., vi, 251, *Tæniocampa*.

1875. Grt., Can. Ent., vii, 57, *Crocigrapha*.

1875. Grt., Can. Ent., vii, 227, pl. i, f. 13, *Crocigrapha*.

HABITAT.—Canada, in May and June; Northern and Eastern States; New York, in May and June.

I have not seen the type of this species. The British Museum specimen from the Grote collection is like the specimens in the National Museum.

Genus **TÆNIOCAMPA** Gn.

1839. Gn., Essai, Ann. Soc. Ent. Fr., viii, 477.

A monographic revision of the species of this genus can be found in the Proc. U. S. Nat. Mus., xii, 474.

T. furfurata Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., xxvi, 201, *Himella*.

1879. Grt., Can. Ent., xi, 27, *Graphiphora*.

1882. Grt., New List, 31, *Tæniocampa*.

HABITAT.—New York; Illinois; Arizona; Colorado; California, in October; British Columbia.

The type is in the British Museum.

T. peredia Grt.*

1883. Grt., Papilio, iii, 32, *Tæniocampa*.

HABITAT.—Maine, in August; northern New York; Vermont.

The types are in the collection of Dr. Thaxter and Mr. Neumøgen.

T. perbrunnea Grt.*

1879. Grt., Can. Ent., x1, 28, *Graphiphora*.

1882. Grt., New List, 31, *Taniocampa*.

HABITAT.—California.

The type is in the British Museum.

T. uniformis Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 472, *Taniocampa*.

HABITAT.—Arizona.

Types are in the National Museum and in the Graef collection.

T. pallis Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 273, *Dianthæcia*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 456, *Taniocampa*.

HABITAT.—Texas in November.

The type is in the British Museum.

T. trifascia Smith.*

1891. Smith, Trans. Am. Ent. Soc., XVIII, 118, *Taniocampa*.

HABITAT.—Colorado.

The type is in the National Museum.

T. carminata Smith.*

1890. Smith, Ent. Amer., VI, 121, *Taniocampa*.

HABITAT.—Colorado.

The type is in the National Museum.

T. columbia Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 472, *Taniocampa*.

HABITAT.—Northwest British Columbia.

The types are in the National Museum and Neumægen collection.

T. culea Gn.*

1852. Gn., Spec. Gen., Noct., I, 404, *Mesogona*.

1856. Wlk., C. B. Mus., Het., x, 474, *Mesogona*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 24, *Mythimna*.
modifica Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 150, *Taniocampa*.
consopita Grt.

1881. Grt., Papilio, I, 154, *Taniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 480, = *modifica*.

HABITAT.—Massachusetts; New York; New Jersey; District of Columbia, in May; Florida; Illinois; Arizona.

Guenée's type is in the British Museum; Mr. Morrison's is in the Tepper collection, and Mr. Grote's is with Mr. Neumægen. I have seen them all, and they refer to the same species. Mr. Grote's species is an inconstant color variety, while *modifica* is exactly like *culea*.

T. rufula Grt.*1874. Grt., Bull. Buff. Soc. Nat. Hist., II, 64, *Dianthæcia*.1879. Grt., Can. Ent., XI, 26, *Tæniocampa*.1881. Grt., Can. Ent., XIII, 126, *Tæniocampa*.

HABITAT.—California, July to October; Colorado.

The type is in the British Museum.

T. perforata Grt.1883. Grt., Papilio, III, 73, *Tæniocampa*.

HABITAT.—Arizona.

The types are in Mr. Neumægen's collection.

T. oviduca Gn.*1853. Gn., Spec. Gen., Noct., I, 357, *Tæniocampa*.1856. Wlk., C. B. Mus., Het., x, 429, *Tæniocampa*.*capsella* Grt.1874. Grt., Proc. Ac. Nat. Sci. Phil., xxvi, 201, *Tæniocampa*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 481, pr. syn.

orobia Harv.1876. Harv., Can. Ent., VIII, 154, *Mamestra*.1881. Grt., Can. Ent., XIII, 126, *Tæniocampa*.1889. Smith, Proc. U. S. Nat. Mus., XII, 489, *Tæniocampa*.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 116, pr. syn.

HABITAT.—Canada; Atlantic States to Florida, west to the Rocky Mountains; Northern and Eastern States, May to July.

I have compared the types of these species in the British Museum and have no doubt of their identity. In the National Museum is a duplicate of Harvey's type, from the Meske collection.

T. utahensis Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 473, *Tæniocampa*.

HABITAT.—Utah.

The type is in the National Museum.

T. curtica Smith.*1890. Smith, Ent. Amer., VI, 122, *Tæniocampa*.

HABITAT.—Sierra Nevada, California.

Types are in the National Museum and in the Edwards collection.

T. incincta Morr.*1874. Morr., Proc. Bost. Soc. N. H., XVII, 133, 156, *Mamestra*.1874. Grt., Buff. Soc. Nat. Sci., II, 215, *Mamestra*.1881. Grt., Can. Ent., XIII, 126, *Tæniocampa*.

HABITAT.—Massachusetts; Illinois; Colorado.

The type is in the National Museum.

T. suffusa Smith.1887. Smith, Proc. U. S. Nat. Mus., N. S. I, *Tæniocampa*.

HABITAT.—Colorado; Arizona.

The type is in the Graef collection.

T. obtusa Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 474, *Tæniocampa*.

HABITAT.—Arizona.

The type is in Mr. Graef's collection.

T. pectinata Smith.*

1887. Smith, Proc. U. S. Nat. Mus., x, 475, *Tæniocampa*.

1891. Smith, Trans. Am. Ent. Soc., xviii, 118, *Tæniocampa*.

HABITAT.—California.

The original type, a somewhat broken specimen, is in the Edwards collection. A fine series of good typical specimens is in the National Museum.

T. annulimacula Smith.*

1891. Smith, Trans. Am. Ent. Soc., xviii, 117, *Tæniocampa*.

HABITAT.—Texas in February.

The types are in the National Museum.

T. addenda Smith.

1890. Smith, Ent. Amer., vi, 122, *Tæniocampa*.

HABITAT.—California.

The type is with Mr. Neumøgen.

T. terminata Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 475, *Tæniocampa*.

HABITAT.—Southern California.

The type is in the Tepper collection.

T. subfuscula Grt.

1873. Grt., Proc. Bost. Soc. N. H., xvi, 244, *Anarta*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, pl. 1, f. 7, *Anarta*.

1887. Smith, Proc. U. S. Nat. Mus., x, 474, *Tæniocampa*.

HABITAT.—Oregon; Montana.

The type is in the British Museum.

T. arthrolita Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., ii, 275, *Graphiphora*.

1889. Smith, Proc. U. S. Nat. Mus., xii, 486, *Tæniocampa*.

HABITAT.—California in November.

The type is in the British Museum. It is a large broad-winged form with pointed apices of primaries, and has hardly the habitus of a *Tæniocampa*, somewhat resembling Mr. Morrison's *vegeta*. The eyes are hairy, the antennæ strongly ciliate.

T. vindemialis Gn.1852. Gn., Spec. Gen., Noct., I, 344, *Ceramica*.1857. Wlk., C. B. Mus., Het., x, 417, *Ceramica*.1875. Grt., Proc. Ac. Nat. Sci. Phil., xxvii, 418, *Mamestra*.**HABITAT.**—East Florida.

The type is in the British Museum and is not at all the species so named in the American collections by Mr. Grote. It has hairy eyes and has a resemblance to *Homoglæa carnosa* in color and in a certain false appearance of transparency in the wings. I had not previously seen the species and rather suspect a West Indian origin for the specimen. It is a female and its reference here may not be final.

T. pacifica Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 120, *Graphiphora*.1875. Grt., Can. Ent., VII, 45, = *incerta*.

1887. Smith, Proc. U. S. Nat. Mus., x, 476, an sp. dist.

HABITAT.—Colorado; California, January, February, and March.

The type is in the British Museum and is distinct from *alia* as described by me.

T. alia Gn.*1852. Gn., Spec. Gen., Noct., I, 352, *Tæniocampa*.1856. Wlk., C. B. Mus., Het., x, 429, *Tæniocampa*.1875. Speyer, Stett. Ent. Zeit., xxxvi, 118, *Tæniocampa*.1887. Smith, Proc. U. S. Nat. Mus., x, 476, *Tæniocampa*.

1891. Dyar, Can. Ent., xxiii, 156, larva.

incerta! Grt., in lists.1875. Speyer, Stett. Ent. Zeit., xxxvi, 116, *Tæniocampa*.1885. Dimmock, Psyche, IV, 273, *Tæniocampa*.

1887. Smith, Proc. U. S. Nat. Mus., x, 476, pr. syn.

instabilis Fitch.1856. Fitch, 3d Report, Trans. N. Y. State Agl. Soc., xvi, 343, *Orthodes*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 23, = *incerta*.1889. Smith, Proc. U. S. Nat. Mus., XII, 487, = *alia*.*insciens* Wlk.1857. Wlk., C. B. Mus., Het., XI, 746, *Orthosia*.var. *hibisci* Gn.1852. Gn., Spec. Gen., Noct., I, 355, *Tæniocampa*.*confuens* Morr.1874. Morr., Proc. Bost. Soc. N. H., xvii, 159, *Tæniocampa*.1880. Grt., Can. Ent., XII, 187, = *incerta*.1889. Smith, Proc. U. S. Nat. Mus., XII, 487, = *alia*.1891. Smith, List Lepidoptera, 48, = *hibisci*.**HABITAT.**—Canada to Georgia, west to the Mississippi States, April to June.

The types of *alia* and *insciens* are in the British Museum and are identical. Fitch's type I saw before the collection was dispersed; but I do not know who has it at present. *Hibisci* is based on a drawing which I have not seen, but the description of which accords perfectly with *confuens*, the type of which is in the Tepper collection.

T. rubescens Wlk.*1865. Wlk., C. B. Mus., Het., xxxii, 671, *Apamea*.1891. Smith, Can. Ent., xxiii, 121, *Taniocampa*.
venata Smith.1890. Smith, Ent. Amer., vi, 123, *Taniocampa*.

1891. Smith, Can. Ent., xxiii, 121, pr. syn.

HABITAT.—Canada; New Hampshire; northern New York.

The types of both species are now in the National Museum. *Rubrescens* was described from Dr. Bethune's collection, and to his courtesy the Museum owes the type.

T. subterminata Smith.*1887. Smith, Proc. U. S. Nat. Mus., x, 476, *Taniocampa*.**HABITAT.**—Maine. New Hampshire; New York, April and May.

Types are in the National Museum and in the Tepper and Fernald collections.

T. garmani Grt.1879. Grt., Can. Ent., xi, 28, *Taniocampa*.**HABITAT.**—Illinois; Iowa.

The type is in the British Museum.

T. præses Grt.1879. Grt., Bull. Geol. Surv., v, 202, *Perigrapha*.1889. Smith, Proc. U. S. Nat. Mus., xii, 488, *Taniocampa*.**HABITAT.**—California.

The type is in the British Museum.

T. styracis Gn.1852. Gn., Spec. Gen., Noct., i, 357, *Taniocampa*.1856. Wlk., C. B. Mus., Het., x, 430, *Taniocampa*.**HABITAT.**—Georgia.

The species is based on one of Abbot's figures, which I have not seen, and I have not, thus far, been able to apply the description.

T. revicta Morr.1875. Morr., Proc. Bost. Soc. N. H., xviii, 241, *Taniocampa*.**HABITAT.**—Illinois.

I have not been able to identify this species and do not know where the type can be found at present.

T. planalis Grt.1883. Grt., Ann. & Mag. Nat. Hist., 1883, 53, *Agrotis*.1883. Grt., Trans. Kans. Ac. Sci., viii, 54, *Agrotis*—reprint.1880. Smith, Bull. U. S. Nat. Mus., 38, 213, *Taniocampid*.**HABITAT.**—New Mexico.

The type is with Prof. Snow. I have seen it and find it a somewhat aberrant form resembling some agrotids and described as such; but

with hairy eyes and unarmed legs. The present generic reference can not be considered final until confirmed by an examination of new material.

T. vegeta Morr.

1875. Morr., Proc. Ac. Nat. Sci., xxvii, 432, *Tæniocampa*.

HABITAT.—Texas.

The type is in the Tepper collection. A correctly named specimen is also in the British Museum, from the Grote collection. The species is not a *Tæniocampa* and probably belongs to the *fasciatæ*; but in default of sufficient study to place it certainly, I leave it here for the present. Mr. Slingerland has called my attention to the fact that the *Cissusa spadix* of Cramer, heretofore referred as a synonym of *Drasteria erechtea*, is a distinct species. On examination I find this to be the fact, and it is more than likely that it will prove the same as the above species. Material for study is lacking, therefore the reference can not be positively made.

Genus **STRETCHIA** Hy. Edw.

1874. Hy. Edw., Proc. Cal. Ac. Sci., v, 267.

The species of this genus are treated and monographically described under *Perigrapha* in the Proc. U. S. Nat. Mus., xii, 490. The European species of *Perigrapha* have a very strong resemblance habitally to the species of *Stretchia*, which has induced the reference of our species to the European genus despite recognized differences in structure. The occurrence of a structurally typical *Perigrapha* in our own fauna renders a return to another generic term necessary, and *Stretchia* somewhat antedates *Acerra* (Grt., Bull. Buff. Soc. Nat. Sci., ii, 162). This law of priority plays odd tricks occasionally and here necessitates the use of a term originally referred to the Bombycidæ and irrecoGNIZABLY described as against another correctly placed and well described.

S. normalis Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 162, *Acerra*.

1875. Grt., Check List Noctuidæ, pl. f. 4, *Acerra*.

1879. Grt., Can. Ent., xi, 27, *Graphiphora*.

1881. Grt., Can. Ent., xiii, 133, *Perigrapha*.

HABITAT.—California.

The type is in the British Museum.

S. inferior Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 477, *Perigrapha*.

HABITAT.—California.

The types are in the National Museum and in the Edwards collection.

S. plusiiformis* Hy. Edw.

1874. Hy. Edw., Proc. Cal. Ac. Sci., v, 267, *Stretchia*.

1882. Grt., New List, 31, *Perigrapha*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 171, *Perigrapha*.

HABITAT.—Nevada; Colorado.

The type is in the Edwards collection.

S. muricina* Grt.

1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 85, *Acerra*.

1879. Grt., Can. Ent., XI, 27, *Graphiphora*.

1882. Grt., Can. Ent., XIII, 133, *Perigrapha*.

HABITAT.—Oregon.

The type is in the Edwards collection.

***S. behrensiana* Grt.**

1875. Grt., Can. Ent., VII, 71, *Graphiphora*.

1881. Grt., Can. Ent., XIII, 133, *Perigrapha*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 493, *Perigrapha*.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 120, *Stretchia*.

HABITAT.—California.

The type is in the British Museum. The specimens I have identified as this species are correct, but represent a distinct varietal form, too inconstant to deserve a name.

S. variabilis* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 119, *Stretchia*.

HABITAT.—Colorado, July.

The types are in the National Museum and in the Neumægen collections.

***S. pulchella* Harv.**

1876. Harv., Can. Ent., VIII, 54, *Graphiphora*.

1889. Smith, Proc. U. S. Nat. Mus., XII, 494, *Perigrapha*.

HABITAT.—California.

The type is in the Edward's collection.

S. erythrolita* Grt.

1879. Grt., Can. Ent., XI, 208, *Graphiphora*.

1881. Grt., Can. Ent., XIII, 133, *Perigrapha*.

HABITAT.—California.

A type is in the National Museum; another in the British Museum.

S. transparens* Grt.

1881. Grt., Bull. Geol. Surv., VI, 583, *Perigrapha*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 171, *Perigrapha*.

HABITAT.—Washington.

The type is in the National Museum from my collection.

Genus **PERIGRAPHA** Lederer.

1857. Lederer, Noct. Eur., 136.

P. prima Smith.1891. Smith, Trans. Am. Ent. Soc., XVIII, 119, *Perigrapha*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

Genus **PERIGONICA** Smith.

1890. Smith, Ent. Amer., VI, 123.

P. angulata Smith.*1890. Smith, Ent. Amer., VI, 124, *Perigonica*.1891. Smith, Trans. Am. Ent. Soc., XVIII, 118, *Perigonica*.

HABITAT.—Sierra Nevada, California, in June and December.

Types are in the Edwards collection and in the National Museum.

P. fulminans Smith.*1890. Smith, Ent. Amer., VI, 124, *Perigonica*.1891. Smith, Trans. Am. Ent. Soc., XVIII, 118, *Perigonica*.

HABITAT.—Colorado.

Types are in the National Museum and in the Rutgers College collection.

Genus **TRICHOCLEA** Grt.

1883. Grt., Papilio, III, 30.

1889. Smith, Proc. U. S. Nat. Mus., XII, 459.

T. edwardsii Smith.*1887. Smith, Proc. U. S. Nat. Mus., X, 478, *Trichoclea*.1889. Smith, Proc. U. S. Nat. Mus., XII, 460, *Trichoclea*.

HABITAT.—California.

The type is in the Edwards collection; exact duplicates are in the National Museum.

T. decepta Grt.*1883. Grt., Papilio, III, 30, *Trichoclea*.1889. Smith, Proc. U. S. Nat. Mus., XII, 460, *Trichoclea*.

HABITAT.—Arizona.

The types are in the National Museum and in Mr. Neumøgen's collection.

T. antica Smith.*1891. Smith, Trans. Am. Ent. Soc., XVIII, 116, *Trichoclea*.

HABITAT.—Los Angeles County, California, April 10.

The types are in the National Museum.

T. postica Smith.*1891. Smith, Trans. Am. Ent. Soc., XVIII, 115, *Trichoclea*.

HABITAT.—Colorado.

The types are in the National Museum and with Mr. Neumøgen.

Genus **TRICHOCOSMIA** Grt.

1883. Grt., Can. Ent., xv, 6.

T. inornata Grt.*1883. Grt., Can. Ent., xv, 6, *Trichocosmia*.

HABITAT.—Arizona.

Types are in the Neumøgen collection and in the National Museum.

Genus **TRICHORTHOSIA** Grt.

1883. Grt., Papilio, III, 31.

T. parallela Grt.1883. Grt., Papilio, III, 31, *Trichorthosia*.1883. Grt., Trans. Kans. Ac. Sci., VIII, 50, *Trichorthosia*.1883. Grt., Proc. Am. Phil. Soc., XXI, 160, *Trichorthosia*.

HABITAT.—New Mexico.

Types are in the Neumøgen collection.

Genus **METALEPSIS** Grt.

1875. Grt., Check List Noct., 25.

M. cornuta Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 68, *Pachnobia*.1875. Grt., Can. Ent., VII, 155, *Pachnobia*.1875. Grt., Check List Noct., 25, *Metalepsis*.1876. Grt., Stett. Ent. Zeit., XXXVII, 136, *Metalepsis*.1883. Grt., Can. Ent., xv, 129, *Metalepsis*.1883. Grt., Proc. Am. Phil. Soc., XXI, 160, *Metalepsis*.

HABITAT.—California.

The type specimen in the British Museum represents a form I had not seen. It looks like a small brown *Pachnobia* with fused ordinary spots. The antennæ are pectinated, front apparently smooth, eyes with hairy lashes, tibiæ unarined.

More recently I have had this species for determination from two sources and from Western localities other than California.

Genus **PSEUDOGLEA** Grt.

1876. Grt., Can. Ent., VIII, 18.

P. blanda Grt.*1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 86, *Choephora*.1876. Grt., Can. Ent., VIII, 18, *Pseudoglea*.*tadata* Grt.1876. Grt., Can. Ent., VIII, 18, *Pseudoglea*.*decepta* Grt.1881. Grt., Bull. Geol. Surv., VI, 271, *Pseudoglea*.

HABITAT.—Colorado; Texas in October and November; California in September; Washington; Vancouver.

The types of all the above are in the British Museum, and are one species only. It is not rare, and varies more than the differences between the three species.

Genus **PSEUDORTHOSIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 161.

P. variabilis Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 161, *Pseudorthosia*.1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 207, *Pseudorthosia*.1875. Grt., Can. Ent., VII, 45, *Pseudorthosia*.1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 86, *Choephora*.1876. Grt., Can. Ent., VIII, 18, *Pseudorthosia*.1883. Grt., Proc. Am. Phil. Soc., XXI, 160, *Pseudorthosia*.**HABITAT.**—California, September and October; Colorado.

I have not seen the type, nor do I know where it is. The species is quite common in some parts of California and is well known. *P. pectinata*, the type of which is in the British Museum, is a *Pachnobia*, which I had redescribed as *ferruginoides*. A specimen labeled "type" by Mr. Morrison is in the National Museum.

Genus **CHOEPHORA** G. & R.

1868. G. & R., Trans. Am. Ent. Soc., II, 199.

C. fungorum G. & R.*1868. G. & R., Trans. Am. Ent. Soc., II, 200, pl. III, 74, *Choephora*.1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 86, *Pseudorthosia*.1876. Grt., Can. Ent., VIII, 17, *Choephora*.1876. Grt., Stett. Ent. Zeit., XXXVII, 136, *Pseudorthosia*.1883. Grt., Proc. Am. Phil. Soc., XXI, 160, *Choephora*.**HABITAT.**—Eastern, Middle, and Central States.

The type is in the collection of the American Entomological Society.

Genus **MESOGONA** Bdv.

1840. Bdv., Gen. et Ind. Meth., 144.

M. oxalina Hbn.1823. Hbn., Samml. Eur. Schmett., IV, 219, *Noctua*.1852. Gn., Spec. Gen., Noct., I, 405, *Mesogona*.*intexta* Harv.1875. Harv., Can. Ent., VII, 136, *Ipimorpha*.

1882. Grt., New List, 32, † pr. syn.

HABITAT.—Sharon Springs, New York.

The type is in the British Museum. Mr. Grote suggests that it is a European example, and he may be correct; at all events it is exactly like ordinary specimens of *oxalina*. But, on the other hand, Mr. von Meske, who sent Dr. Harvey the specimen, was a very careful collector, and labeled the insect Sharon Springs, a favorite collecting ground.

The *Mesogona culea* of M. Guenée is a *Tæniocampa*, and will be found under that genus.

Genus **ZOTHECA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 68.

Z. tranquilla Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 69, *Zotheca*.

1891. Dyar, Can. Ent., XXIII, 205, life history.

sambuci Behr.1874. Behr, in Strk. Lep. Rhop. et Het., 94, *Cosmia*.1885. Behr, Bull. Cal. Ac. Sci., III, 61, *Euperia*.*var. viridula* Grt.1878. Grt., Bull. Geol. Surv., IV, 180, pr. *var.***HABITAT**.—California.

Mr. Grote's types are in the British Museum, where there are also two specimens, one of each form, marked "*Cosmia sambuci* Behr, don. O. S. 8, '78." The O. S., refers to Baron von Osten Sacken, who probably obtained either specimens or name from Dr. Behr himself. Mr. Strecker has also named this *sambuci* for collectors.

Genus **CALYMNIA** Hbn.

1816. Hbn., Verzeichniss, 235.

C. orina Gn.*1852. Gn., Spec. Gen., Noct., II, 10, *Cosmia*.1856. Wlk., C. B. Mus., Het., x, 489, *Cosmia*.1873. Grt., Can. Ent., v, 205, *Cosmia*.1873. Saund., Can. Ent., v, 206, *Cosmia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 24, *Calymnia*.*var. calami* Harv.1876. Harv., Can. Ent., VIII, 54, *Calymnia*.

HABITAT.—Canada, in July, to Texas; Colorado; California; Massachusetts, July and August; Texas, May and June.

Specimens apparently determined by Guenée are in the British Museum, where also Dr. Harvey's type is. The latter is the paler form, and bears much the same relation to *orina* that *Zotheca viridifera* does to *tranquilla*.

Genus **IPIMORPHA** Hbn.

1816. Hbn., Verzeichniss, 238.

I. pleonectusa Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 191, *Ipimorpha*.*æquilinea* Smith.1882. Smith, Bull. Bkln. Ent. Soc., v, 67, *Calymnia*.

1891. Smith, List Lepidoptera, 49, pr. syn.

HABITAT.—Colorado; Utah; New York in July and August; Massachusetts in August; New Jersey.

The type is in Dr. Lintner's collection.

I. subvexa Grt.1876. Grt., Can. Ent., VIII, 189, *Ipimorpha*.1882. Grt., New List, 32, † pr. *var.*

HABITAT.—Texas; Colorado.

I have not seen the type and do not know where it is. Mr. Grote has suggested that it may be the southern form of the preceding, but later lists it as a good species. I am not in a position to decide the matter and leave it as Mr. Grote did.

Genus **TRILEUCA** Grt.

1883. Grt., Proc. Am. Phil. Soc., xxi, 166.

T. buzea Grt.

1882. Grt., Can. Ent., xiii, 230, *Schinia*.

1882. Grt., Papilio, ii, 64, pl. 1, f. 4, *Schinia*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 166, *Trileuca*.

HABITAT.—Southwestern Texas.

The type is in Mr. Neumœgen's collection.

T. dentalis Smith..

1891. Smith, Trans. Am. Ent. Soc., xviii, 123, *Trileuca*.

HABITAT.—Southern Texas.

The type is in Mr. Neumœgen's collection.

T. gulnare Strk.

1878. Strk., Proc. Dav. Ac. Sci., ii, 274, pl. ix, f. 1, *Schinia*.

1883. Smith, Trans. Am. Ent. Soc., x, 252, *Schinia*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 153, *Trileuca*.

HABITAT.—Pennsylvania; Illinois.

The type is with Mr. Strecker. I have seen one other specimen. It may not be congeneric with the others referred here, but it is nearer right than with *Schinia*. Strictly, *rectifascia* is the type of *Trileuca*, because *buzea* was placed in *Xanthodes* on p. 153, and is only incidentally referred to *Trileuca* on p. 166; but *rectifascia* is an *Atethmia*, and the genus, as based on that species, of course, a synonym. Mr. Grote did not see proof of this paper in the Proc. Am. Phil. Soc., which is full of typographical and other errors, else he would have seen the contradiction, and it is in accordance with "the usual comity and practice" that I retain the name with *buzea* as type.

Genus **ATETHMIA** Hbn.

1816. Hbn., Verzeichniss, 238.

A. subusta Hbn.*

1818. Hbn., Zutræge, ii, 205, 206, *Atethmia*.

1816. Hbn., Verzeichniss, 238, *Atethmia*.

1852. Gn., Spec. Gen., Noct., ii, 13, *Atethmia*.

1856. Wlk., C. B. Mus., Het., x, 490, *Atethmia*.

HABITAT.—Florida; Texas; Central and South America

Mr. Druce says, in the Biol. Cent. Am., Het. 290, that *Anthophila erecta* Wlk., *Poaphila congesta* Wlk., and *Laphygma trilineata* Wlk., are all the same as *subusta* Hbn., and he is probably right.

A. inusta Gn. *1852. Gn., Spec. Gen., Noct., II, 12, *Atethmia*.1856. Wlk., C. B. Mus., Het., x, 491, *Atethmia*.**HABITAT.**—Texas; Florida.

Both the above species are South American and are scarcely distinct. I have received them for identification on several occasions and have seen them in collections both from Texas and Florida. I have no references to the South American literature, and in our own the species have not been heretofore referred to.

A. rectifascia Grt. *1874. Grt., Proc. Bost. Soc. N. H., xvi, 242, *Schinia*.1883. Smith, Trans. Am. Ent. Soc., x, 247, *Schinia*.1883. Grt., Proc. Am. Phil. Soc., xxi, 166, *Trileuca*.**HABITAT.**—New Jersey; Pennsylvania; Alabama; Illinois.

Specimens from the Grote collection, apparently not types, are in the British Museum. The species is larger than, but fully congeneric with, the preceding.

A. canescens Behr.1885. Behr, Bull. Cal. Ac. Sci., III, 61, *Atethmia*.**HABITAT.**—California.

It is almost certain that under this name Dr. Behr redescribes *Calymnia orina* Gn., and its variety *calami* Harv. I have not seen Californian specimens, however, and therefore cite the species as described.

Genus **CEA** Grt.

1883. Grt., Papilio, III, 78.

C. immaculata Grt.1883. Grt., Papilio, III, 78, *Cea*.1883. Grt., Proc. Am. Phil. Soc., xxi, 171, *Cea*.**HABITAT.**—Arizona.

The type is in Mr. Neumægen's collection.

Genus **COSMIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 84. - - -

C. paleacea Esp. *1788. Esper, Schmetterlinge, pl. 122, f. 504, *Noctua*.1857. Lederer, Schmett. Eur., 143, *Cosmia*.
discolor Wlk.1859. Wlk., C. B. Mus., Het., xv, 1658, *Mythimna*.1882. Grt., Ill. Essay, 41, = *infumata*.*infumata* Grt.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 160, *Orthosia*.1877. Grt., Can. Ent., IX, 22, *Cosmia*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 160, f pr. syn.

HABITAT.—United States generally; Canada and Northern and Eastern States in August and September.

The types of *infumata* and *discolor* are in the British Museum and are the same species; nor can I find them different from the European forms under the same name.

C. perophoroides Strk.

1876. Strk., Proc. Ac. Nat. Sci. Phil., xxviii, 152, *Cosmia*.

HABITAT.—Florida.

The type is in the Strecker collection. I do not know the species.

Genus **CLEOCERIS** Bdv.

1829. Bdv., Index Meth., 93.

C. onychina Gn.

1852. Gn., Spec. Gen., Noct., ii, 48, *Epunda*.

1857. Wlk., C. B. Mus., Het., xi, 528, *Raphia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 25, *Cleoceris*.

HABITAT.—North America.

The type is probably with M. Oberthür, and I have not seen it. The species has not been identified in American collections.

C. elda French.*

1887. French, Can. Ent., xix, 5, *Homohadena*.

1891. Smith, Trans. Am. Ent. Soc., xviii, 108, *Dryobota*.

HABITAT.—California, Sierra Nevada, September.

Prof. French has his type and has kindly sent me a compared specimen.

C. rectifascia Smith.*

1891. Smith, Trans. Am. Ent. Soc., xviii, 109, *Dryobota*.

HABITAT.—Sierra Nevada, California.

Types are in the National Museum and in the Edwards collection.

C. curvifascia Smith.*

1891. Smith, Trans. Am. Ent. Soc., xviii, 109, *Dryobota*.

HABITAT.—California, Sierra Nevada, and Placer County, in September.

Types are in the National Museum and in the Edwards collection.

The last three species are referred to *Cleoceris* after comparing material in the British Museum. I do not consider the genus at all well placed in the series; but until the necessary critical studies are made, changes are tentative at best, and no harm is done in leaving it here for the present.

Genus **ANCHOCELIS** Gn.

1839. Gn., Ann. Soc. Ent. Fr., 483.

A. digitalis Grt.*

1882. Grt., Bull. Geol. Surv., vi, 584, *Anchocelis*.

HABITAT.—Maine; New Hampshire; New York; Illinois.

The type is with Mr. Neumægen.

Genus **PYRRHIA** Hbn.

1816. Hübner, Verzeichniss, 262.

P. umbra Hufn.*

1767. Hufnagel, Berliner Mag., III, 294, *Noctua*.
 1852. Gn., Spec. Gen., Noct., II, 178, *Heliothis*.
 1883. Smith, Trans. Am. Ent. Soc., x, 223, *Chariclea*.
 exprimens † Grt.
 1868. G. & R., Trans. Am. Ent. Soc., III, 180, † pr. syn.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 124, *Chariclea*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 35, pl. III, f. 5, *Pyrrhia*.
 1874. Lint., Ent. Cont., III, 163, larva, *Chariclea*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 156, 350, *Pyrrhia*.
 1878. Graef, Bull. Bkln. Ent. Soc., I, 10, pr. syn.
 1881. Grt., Bull. Geol. Surv., VI, 564, *Pyrrhia*.
 1883. Smith, Trans. Am. Ent. Soc., x, 223, pr. syn.
 1891. Butler, Entomologist, xxiv, 292, pr. syn.
 var. *exprimens* Wlk.*
 1857. Wlk., C. B. Mus., Het., XI, 687, *Heliothis*.
 1891. Butler, Entomologist, xxiv, 292, *Pyrrhia*.
 angulata Grt.
 1874. Grt., Trans. Am. Ent. Soc., v, 93, *Pyrrhia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, pl. III, f. 6, *Pyrrhia*.
 1876. Speyer, Stett. Ent. Zeit., xxxvii, 203, an sp. dist.
 1881. Coquillett, Papilio, I, 8, larva.
 1882. Grt., Bull. Geol. Surv., VI, 564, *Pyrrhia*.
 1883. Smith, Trans. Am. Ent. Soc., x, 223, *Chariclea*, et pr. syn.
 1883. Hy. Edw., Papilio, III, 135, larva.
 1886. Grt., Can. Ent., xviii, 231, an sp. dist.
 1891. Butler, Entomologist, xxiv, 292, =*exprimens*.

HABITAT.—Canada in June and July; Eastern and Central United States, June to August; Colorado.

Walker's type is in the British Museum, and so is the type of *angulata* Grt. Mr. Butler has already shown that Mr. Grote did not correctly identify Walker's species, and redescribed it as *angulata*. In the Museum at Berlin are specimens from Brazil marked *cilisca* Gn., (Noct. II, 179), which I think will fall in with this species. The place assigned the genus here expresses my conviction that the genus is Orthosiid rather than Heliothid, though it may find closer allies on future study.

P. stilla Grt.

1880. Grt., No. Am. Ent., I, 45, *Pyrrhia*.
 1881. Grt., Trans. Kans. Ac. Sci., VII, 68, *Pyrrhia*.
 1882. Grt., Bull. Geol. Surv., VI, 564, *Pyrrhia*.

HABITAT.—Colorado; New Mexico; Western States.

The type is with Prof. Snow.

Genus **PARASTICTIS** Hbn.

1816. Hbn., Verzeichniss, 212.

P. discivaria Wlk.*

1856. Wlk., C. B. Mus., Het., ix, 27, *Bryophila*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 8, *Jaspidea*
 1882. Grt., Ill. Essay, 40, *Parastictis*.
gentilis Grt.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 143, *Tæniosea*.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 432, *Dyschorista*.
 1875. Grt., Can. Ent., VII, 226, pl. I, f. 1, *Parastictis*.
 1882. Grt., Ill. Essay, 40, pr. syn.
var. perbellis Grt.*
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 144, *Tæniosea*.
 1875. Grt., Can. Ent., VII, 226, pl. I, f. 2, *Parastictis*.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 432, *Dyschorista*.

HABITAT.—Hudson's Bay Territory; Canada in June and July; Northern, Eastern, Middle, and Central States, June and July and August.

Types of all the names are in the British Museum, and refer to the same species. *Dyschorista* Led., is the genus to which this species should be referred if Hübner's name does not apply. Mr. Grote has himself referred *perbellis* as a variety.

Genus **ORTHOSIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 79.

O. purpurea Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 125, *Orthosia*.
var. crispa Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 276, *Orthosia*.
 1881. Butler, Papilio, I, 169, *Orthosia*.

HABITAT.—California, October and November.

The types are in the British Museum. *Crispa* is a paler form, but differs in nothing else. There is a very large series of specimens in the National Museum that makes the relationship between these two forms clear.

O. decipiens Grt.

1881. Grt., Bull. Geol. Surv., VI, 269, *Orthosia*.

HABITAT.—Northern Indiana in June.

The type is in the British Museum.

O. ralla G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., I, 346, pl. VII, f. 49, *Xanthia*
 1874. Morr., Proc. Ac. Nat. Sci. Phil., 1874, 66, = *ferruginoides*.
 1875. Morr., Can. Ent., VII, 78, = *Orth. ferruginoides*.
 1875. Lintner, Can. Ent., VII, 78, an bona species.

HABITAT.—Eastern and Middle States.

Specimens from the Grote collection are in the British Museum; but there is none marked type. I have no knowledge where the original specimens are at present.

O. bicolorago Gn.*

1852. Gn., Spec. Gen., Noct., I, 397, *Xanthia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 124, var. *ferruginoides*.
 1875. Morr., Proc. Ac. Nat. Sci., 1875, 66, = *ferruginoides*.
spurcata Wlk.
 1857. Wlk., C. B. Mus., Het., XI, 749, *Xanthia*.
 1868. G. & R., Trans. Am. Ent. Soc., III, 78, pr. syn.
 var *ferruginoides* Gn.
 1852. Gn., Spec. Gen., Noct., I, 398, *Xanthia ferruginea*, var.
 1868. Bethune, Can. Ent., I, 47 (49), *Xanthia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 124, *Orthosia*.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 66, *Xanthia*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 119, *Orthosia*.
bicolorago † Wlk.
 1856. Wlk., C. B. Mus., Het., X, 464, *Xanthia*.
 1868. G. & R., Trans. Am. Ent. Soc., III, 78, pr. syn.

HABITAT.—Canada to Pennsylvania, west to the Mississippi Valley, August to November.

The types are all in the British Museum and refer to one species only. It is rather curious that *ferruginoides* should so long have stood for the species with *bicolorago* as the variety, while the opposite must be the status. *Bicolorago* precedes *ferruginoides* by one page and was described as a species; while *ferruginoides* was placed as a variety of the European *ferruginea*.

O. euroa G. & R.*

1873. G. & R., Trans. Am. Ent. Soc., IV, 431, *Xanthia*.
puta ‖ G. & R.
 1868. G. & R., Trans. Am. Ent. Soc., I, 347. pl. 7, f. 50, *Xanthia*.
 1873. G. & R., Trans. Am. Ent. Soc., IV, 431, n. b. 1.

HABITAT.—Canada in July and September, to Pennsylvania, to the Mississippi Valley; Colorado.

I have not seen the type. Specimens named by Mr. Grote are in the British Museum.

O. inopa Grt.*

1881. Grt., Bull. Geol. Surv., VI, 270, *Orthosia*.

HABITAT.—Kittery Point, Maine, in September.

The type is in the British Museum; duplicates are in Dr. Thaxter's collection.

O. hamifera Grt.

1888. Grt., Can. Ent., XX, 130, *Orthosia*.

HABITAT.—California.

I have not seen the type. It is probably in Mr. Grote's possession, or it may be with Mr. Jas. Behrens in San Francisco. It is said to be near *purpurea*, but larger.

O. aurantiago Gn.*

1852. Gn., Spec. Gen., Noct., i, 394, pl. 7, f. 1, *Xanthia*.

1856. Wlk., C. B. Mus., Het., x, 464, *Xanthia*.

1880. Grt., Can. Ent., xii, 186, *Orthosia*.
illiterata Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 211, *Pyrrhia*.

1880. Grt., Can. Ent., xii, 186, pr. syn.

differta Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 67, *Orthosia*.

1880. Grt., Can. Ent., xii, 186, pr. syn.
illinoisensis French.

1879. French, Can. Ent., xi, 77, *Heliothis*.

1879. Grt., North Am. Ent., i, 16 = *illiterata*.

HABITAT.—New York to Florida; Illinois; Missouri; Massachusetts in August; Wisconsin.

The types of *aurantiago* and *illiterata* are in the British Museum. The type of *differta* is in the Tepper collection, while Prof. French has his own typical specimen.

O. americana Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 434, *Orthosia*.

HABITAT.—New York.

The type is in the Tepper collection.

O. posticata Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 8, *Orthosia*.

HABITAT.—Texas in November.

The type is in the British Museum.

O. citima Grt.

1883. Grt., Papilio, iii, 74, *Orthosia*.

HABITAT.—Arizona.

The type is in the Neumœgen collection.

O. conradi Grt.*

1879. Grt., Bull. Geol. Surv., v, 203, *Orthosia*.

HABITAT.—Pennsylvania; New York; Middle and Eastern States.

The type is in the British Museum.

O. helva Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 310, *Orthosia*.

1875. Grt., Can. Ent., vii, 84, *Orthosia*.

HABITAT.—Canada to Pennsylvania, August and September; west to the Mississippi Valley.

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r. Gr

This seems to be the species
the Bull. Buff. Soc. Nat. Sci.,

O. lutosa* Andrews.

1877. Andrews, Can. Ent., ix, 99, *Orthosia*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 93, *Orthosia*.

HABITAT.—Middle, Eastern, and Central States; Vermont; New York in June; New Jersey.

The type is with Mr. Akhurst, of Brooklyn.

***O. immaculata* Morr.**

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 433, *Orthosia*.

HABITAT.—Nevada.

The species was described from the collection of the Museum of Comparative Zoölogy at Cambridge, where the type now is.

***O. belangeri* Morr.**

1874. Morr., Proc. Bost. Soc. N. H., xvii, 149, *Orthosia*.

HABITAT.—Canada.

The type is in the Tepper collection.

***O. chloropha* Hbn.**

1806. Hbn., Samml. Ex. Schmett., i, 16, f. 73, 74, *Xestia*.

1816. Hbn., Verzeichnisse, 233, *Xestia*.

1856. Wlk., C. B. Mus., Het., x, 470, *Xestia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 25, *Xanthia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 125, *Orthosia*.

1880. Grt., Can. Ent., xii, 86, *Orthosia*.

HABITAT.—Georgia; Florida.

This species has not yet been identified in American collections.

Genus *HOMOGLEA* Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 240.

H. hircina* Morr.

1875. Morr., Proc. Bost. Soc. N. H., xviii, 240, *Homoglæa*.

1878. Grt., Bull. Geol. Surv., iv, 181, *Homoglæa*.

1880. Grt., Bull. Bkln. Ent. Soc., iii, 39, *Homoglæa*.

HABITAT.—Northern United States, east of the Rocky Mountains; Illinois.

The type is in the Neumægen collection. A named specimen in the British Museum from the Grote collection is like my identification of the species and like the type.

H. carnosa* Grt.

1877. Grt., Can. Ent., ix, 21 et 70, *Glæa*.

1878. Grt., Bull. Geol. Surv., iv, 181, *Homoglæa*.

HABITAT.—Maine; New York; Massachusetts.

The type is in the British Museum. The species is recorded from Long Island, but I do not remember having seen it in local collections.

Genus *GLÆA* Hbn.
1806. Hübner, Tentamen.

In using the term *Glæa* and crediting it to Hübner, I follow Mr. Grote. I am not sure that our species of *Glæa* are entirely congeneric with the European species referred to *Cerastis* or *Orrhodia* and therefore prefer to use a distinctive term. As a matter of course, if our species do prove generically distinct, Hübner's name can not hold; but until a critical study settles these matters it will be safer to use a familiar term. *G. anchoceloides* has been listed under *Rhynchagrotis* and will be found replacing *cupida* Grt. In Can. Ent., XII, 155, Mr. Grote has listed the species and divided them into named sections, which he afterwards used as genera.

G. viatica Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., 29, *Orthosia*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 125, *Glæa*.
1878. Grt., Bull. Geol. Surv., IV, 181, *Cerastis*.
1880. Grt., Can. Ent., XII, 155, *Glæa*.

HABITAT.—Massachusetts in October; New York; Alabama; Middle and Southern States; Texas in November.

The type is in the British Museum. It is perhaps the largest of our species, but has nearly the markings of *decliva*, which is referred to *Epiglæa*.

G. inulta Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., 30, *Orthosia*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 125, pl. 1, f. 9, *Glæa*.
1878. Grt., Bull. Geol. Surv., IV, 181, *Cerastis*.
1880. Grt., Can. Ent., XII, 155, *Glæa*.

HABITAT.—Canada to Virginia, west to Illinois; Iowa, September and October.

The type is in the British Museum. It is perhaps our most common species.

G. olivata Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 120, *Glæa*.
1878. Grt., Bull. Geol. Surv., IV, 181, *Cerastis*.
1880. Grt., Can. Ent., XII, 155, *Glæa*.

HABITAT.—California in September.

The type is in the British Museum.

G. signata French.*

1879. French, Can. Ent., XI, 76, *Orthosia*.
anchoceloides † Grt.
1879. Grt., No. Am. Ent., I, 16, *Glæa*.

HABITAT.—Middle and Central States; New York; Illinois; District of Columbia in April.

Prof. French has his own type and has kindly sent me a duplicate. Guenée's description would be distinctly applicable were the generic reference correct.

G. sericea Morr.*1874. Morr., Proc. Bost. Soc. N. H., xvii, 151, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, = *venustula*.1880. Grt., Bull. Bkln. Ent. Soc., iii, 37, = *venustula*.

1890. Grt., Revised List Noct., 27, note 16, an sp. dist.

HABITAT.—Massachusetts in October; Illinois; Middle and Central States, September and October; Wisconsin; District of Columbia.

I have not seen the type and have no knowledge of its present whereabouts. Mr. Grote, after referring his species *venustula* as a synonym of that described by Mr. Morrison, now claims it distinct. As I have not had an opportunity of comparing types, I accept Mr. Grote's latest reference until further study decides the matter.

Genus **EPIGLÆA** Grt.

1878. Grt., Bull. Geol. Surv., iv, 181.

E. pastillicans Morr.*1874. Morr., Proc. Bost. Soc. Nat. Hist., xvii, 151, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, *Epiglæa*.

HABITAT.—New Hampshire in September; Massachusetts in October; New York in September; District of Columbia in October.

I have not seen the type, nor do I know where it is at present.

E. tremula Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., ii, 276, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, *Epiglæa*.

HABITAT.—Texas in November.

The type is in the British Museum.

E. venustula Grt.1875. Grt., Can. Ent., vii, 84, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, *Epiglæa*.1890. Grt., Revised List Noct., 27, note 16, *Epiglæa*.

HABITAT.—Maryland.

The type is in Dr. Lintner's collection.

E. apiata Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 30, *Orthosia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 125, pl. i, f. 8, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, *Epiglæa*.

HABITAT.—Massachusetts in October; New York in September; Illinois; Middle and Central States.

The type is in the British Museum.

E. decliva Grt.*1874. 6th Rept. Peab. Ac. Sci., 30, *Orthosia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 125, *Glæa*.1878. Grt., Bull. Geol. Surv., iv, 181, *Epiglæa*.

deleta Grt.1877. Grt., *Psyche*, II, 80, *Glœa*.1878. Grt., *Bull. Geol. Surv.*, IV, 181, *Epiglœa*.1890. Grt., *Revised List Noct.*, 27, pr. var.

HABITAT.—Canada in September and October; Eastern, Middle, and Central States; Massachusetts in September; District of Columbia in October.

The type of *decliva* is in the British Museum. Of *deleta* Mr. Thaxter has typical specimens, and these are not different from the usual forms of *decliva*.

Genus **ORRHODIA** Hbn.1816. Hbn., *Verzeichniss*, 231.**O. californica** Smith.*1891. Smith, *Trans. Am. Ent. Soc.*, XVIII, 113, *Orrhodia*.**HABITAT.**—Sierra Nevada, California.

The type is in the National Museum. This seems more nearly congeneric with the European species.

Genus **XANTHIA** Ochs.1816. Ochs., *Schmett. Eur.*, IV, 82.**X. flavago** Fabr.*1787. Fabr., *Mant. Ins.*, 160, *Noctua*.1857. Wlk., *C. B. Mus.*, *Het.*, XI, 715, *Gortyna togata* Esp.1788. Esper, *Schmett. Eur.*, pl. 124, f. 1, *Noctua*.1876. Speyer, *Stett. Ent. Zeit.*, XXXVI, 204, *Xanthia silago* Hbn.1800. Hbn., *Samml. Eur. Schmett.*, *Noct.*, 191, *Noctua*.1816. Hbn., *Verzeichniss*, 234, *Citria*.1852. Gn., *Spec. Gen.*, *Noct.*, I, 394, *Xanthia*.1856. Wlk., *C. B. Mus.*, *Het.*, X, 461, *Xanthia*.

HABITAT.—Canada; Northern and Eastern States; Northern New York, September.

I follow Staudinger in the synonymy. Staudinger, Walker, and Guenée should be consulted for European bibliography. The insect seems to have been very little referred to in our own literature.

X. puta G. & R.1868. G. & R., *Trans. Am. Ent. Soc.*, I, 347, pl. 7, f. 50, *Xanthia*.**HABITAT.**—Northern and Eastern States; New York.

I have not seen the type and do not know its present whereabouts.

Genus **JODIA** Hbn.1816. Hbn., *Verzeichniss*, 234.**J. rufago** Hbn.*1818. Hbn., *Zutraege*, 15, ff. 61, 62, *Jodia*.1816. Hbn., *Verzeichniss*, 234, *Jodia*.1852. Gn., *Spec. Gen.*, *Noct.*, I, 392, *Xanthia*.1856. Wlk., *C. B. Mus.*, *Het.*, X, 464, *Xanthia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 25, *Xanthia*.

1880. Grt., Can. Ent., XII, 86, *Jodia*.

honesta Wlk.

1859. Wlk., C. B. Mus., Het., XIV, 1711, *Cirrædia*.

HABITAT.—Canada to Florida, west to Texas; Massachusetts and New Jersey in April; Texas in March, February, and May.

Walker's type is in the British Museum and is the same as the *Jodia rufago* of that collection.

Genus **CIRRÆDIA** Gn.

1852. Gn., Spec. Gen., Noct., I, 401.

C. pampina Gn.*

1852. Gn., Spec. Gen., Noct., I, 402, pl. 7, f. 2, *Cirrædia*.

1856. Wlk., C. B. Mus., Het., X, 472, *Cirrædia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 24, *Atethmia*.

1874. Morr., Can. Ent., VI, 259, *Cirrædia*.

1875. Grt., Can. Ent., VII, 206, *Eucirrædia*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 160, *Eucirrædia*.

HABITAT.—Nova Scotia, southward to Virginia, west to the Rocky Mountains, August to October.

Guenée's type is in the British Museum. I can not see the slightest basis for Mr. Grote's genus in his description of it.

Genus **SCOLIOPTERYX** Germ.

1812. Germ., Syst. Gloss. Prodrumus, 14.

S. Hbatrix Linn.*

1758. Linn., Syst. Nat., ed. X, 507, *Bombyx*.

1767. Linn., Syst. Nat., ed. XII, 831, *Bombyx*.

1781. Fabr., Spec. Ins., II, 224, *Noctua*.

1793. Fabr., Ent. Syst., III, 2, 64, *Noctua*.

1816. Hbn., Verzeichniss, 248, *Euphemias*.

1825. Treitschke, Schneitt. Eur., V, 2, 172, *Calpe*.

1852. Gn., Spec. Gen., Noct., II, 405, *Gonoptera*.

1858. Wlk., C. B. Mus., Het., XIII, 1010, *Scoliopteryx*.

1874. Lintner, Ent. Cont., III, 164, larva.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 167, *Scoliopteryx*.

1879. Andrews, Psyche, II, 272, *Scoliopteryx*, larva.

1881. Coquillett, Papilio, I, 56, larva.

HABITAT.—Nova Scotia; Hudson Bay Territory; south to Texas, west to California; New Mexico, May to November.

Most of the European bibliography is omitted. Reference should be made to Staudinger, Walker, and Guenée.

Genus **SCOPELOSOMA** Curtis.

1838. Curtis, British Insects, XIV, 635.

A revision of the species of this genus is in *Entomologica Americana* for 1890, volume VI, p. 146. An examination of the types of all the species in the British Museum and elsewhere shows that the identifications made and characters given are correct. Only one change in name is necessitated. All the species appear in the autumn and winter as imagos, reappearing in early spring.

S. indirecta Wlk.*

1857. Wlk., Cat. Brit. Mus., Het., x, 468, *Xanthia*.
græfiana Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 69, *Scopelosoma*.

1882. Grt., Bull. Geol. Surv., VI, 583, *Scopelosoma*.

HABITAT.—District of Columbia and northward.

The Grote and Walker types are both in the British Museum, and I regret that I can not find any differences between them. Walker's species is from "locality unknown."

S. moffatiana Grt.*

1882. Grt., Bull. Geol. Surv., VI, 583, *Scopelosoma*.
græfiana † Grt.

1882. Grt., Ill. Essay, 65, pl. 3, f. 38, *Scopelosoma*.

1882. Grt., Bull. Geol. Surv., VI, 583, pr. syn.

1888. Pearsall, Ent. Amer., IV, 59, larva.

HABITAT.—District of Columbia and northward.

This species does not seem to be in the British Museum. The type is with Mr. Neunægen.

S. pettiti Grt.*

1875. Grt., Can. Ent., VII, 188, *Scopelosoma*.

1877. Grt., Can. Ent., IX, 213, *Scopelosoma*.

HABITAT.—Canada; New York; Iowa.

The type is in the British Museum.

S. ceromatica Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 70, *Scopelosoma*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 125, *Xanthia*.

HABITAT.—New Jersey; New York; New Hampshire; Maine; Canada.

The type is the British Museum.

S. tristigmata Grt.*

1877. Grt., Can. Ent., IX, 156, *Scopelosoma*.

1884. Thaxter, Can. Ent., XVI, 33, life history.

HABITAT.—District of Columbia, northward.

The type is in the British Museum.

S. walkeri Grt.*

1864. Grt., Proc. Ent. Soc. Phil., II, 439, pl. 9, f. 5, *Dichagramma*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 192, *Scopelosoma*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 71, an var. *sidus*.

1875. Grt., List Noctuidæ, 14, an sp. dist.

1882. Grt., New List, 32, an var. *sidus*.

1884. Thaxter, Can. Ent., XVI, 31; an sp. dist.—life history.

HABITAT.—Texas; Iowa; New York; Maine; Canada.

I did not see this species in the British Museum. I do not know where the type is.

S. sidus Gn.*

1852. Gn., Spec. Gen., Noct., I, 386, *Scopelosoma*.
 1856. Wlk., C. B. Mus., Het., x, 454, *Eupsilia*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 191, *Scopelosoma*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 71, *Scopelosoma*.
vinulenta Grt.
 1864. Grt., Proc. Ent. Soc. Phil., II, 440, pl. 9, f. 6, *Dichagramma*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 191, pr. syn.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 70, an sp. dist.
 1882. Grt., New List, 32, an var. *sidus*.
 1884. Thaxter, Can. Ent., xvi, 32, life history.

HABITAT.—Texas; New York, and northward.

Guenée's type is in the British Museum and is like Mr. Grote's *vinulenta*.

S. morrisoni Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 70, *Scopelosoma*.
 1884. Thaxter, Can. Ent., xvi, 30, life history.

HABITAT.—New York; Massachusetts, northward to Canada.

The type is in the British Museum.

S. devia Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 209, *Scopelosoma*.
 1884. Thaxter, Can. Ent., xvi, 33, life history.

HABITAT.—New York and northward.

This type is in the British Museum.

Genus **LITHOLOMIA** Grt.

1875. Grt., Can. Ent., VII, 206.

L. napæ Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 152, *Scopelosoma*.
 1875. Grt., Can. Ent., VII, 206, 207, pl. I, f. 4, *Litholomia*.

HABITAT.—Canada in May; Massachusetts; New York; Northern and Eastern States; Colorado; California in September.

I have not seen the type, nor do I know where it is at present.

L. dunbari Harv.

1876. Harv., Can. Ent., VIII, 52, *Hadena*.

HABITAT.—Vancouver.

The type is in the Edwards collection and is fully congeneric with and closely allied to *napæ* Morr. It is scarcely likely that the two will prove to be identical, but the differences are reducible to small variations in markings and are in no sense generic. I have handled a very large number of specimens of *napæ*, without finding a *dunbari* among them.

Genus **XYLINA** Ochs.

1816. Ochs., Schmett. Eur., IV, 85.

I use this name in preference to *Lithophane* because both are catalogue names and *Xylina* has priority. The Verzeichniss was not published until 1818 at least. All the species so far as known to me appear in autumn, hibernate, and reappear in early spring.

X. disposita Morr.*

1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 116, *Lithophane*.

HABITAT.—Canada; Massachusetts; New York in April and May. I have not seen the type and do not know where it is.

X. hemina Grt.

1879. Grt., Bull. Geol. Surv., v, 202, *Lithophane*.

HABITAT.—Northern and Eastern States; New York in September. The type is in the British Museum.

X. signosa Wlk.*

1857. Wlk., C. B. Mus., Het., XI, 627, *Xylina*.

petulca Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 31, *Lithophane*.

1891. Butler, Entomologist, XXIV, 242, pr. syn.

HABITAT.—Canada; Northeastern United States.

The types are both in the British Museum and refer to the same species. Mr. Grote has misidentified Walker's species, the *signosa* Grote remaining unnamed.

X. gausapata Grt.

1883. Grt., Papilio, III, 77, *Lithophane*.

HABITAT.—California.

The type should be in Mr. Neumægen's collection.

X. ferrealis Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., 32, *Lithophane*.

HABITAT.—New York; Maine; Canada.

The type is in the British Museum. A long series of specimens in Dr. Thaxter's collection some years ago led me to believe in a rather close relation between *ferrealis* and *signosa* (*petulca*). I have not studied them since.

X. innominata nom nov.*

signosa † Grt.

1874. Grt., 6th Rept. Peab. Ac. Sci., 33, *Lithophane*.

HABITAT.—Northeastern United States; Canada; Colorado.

The new name is intended to apply to that species identified and labeled as *signosa* by Mr. Grote and has no type specimen.

X. bethunei G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., I, 354, pl. 7, f. 56, *Xylina*.

1869. Bethune, Can. Ent., I, 86, *Xylina*.

1874. Grt., 6th Rept. Peab. Ac. Sci., 33, *Lithophane*.

HABITAT.—Canada; Northern, Eastern, and Middle States.

I do not know where the type of this species is at present.

X. oriunda Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 160, *Lithophane*.

HABITAT.—Canada; Wisconsin.

I have not seen the type and do not know where it is.

X. semiusta Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane*.

HABITAT.—Canada; New York; Vermont; Maine.

A type is in the British Museum; another in the Tepper collection.

X. contenta Grt.1880. Grt., Can. Ent., XII, 216, *Lithophane*.

HABITAT.—California.

The type is in the British Museum.

X. fagina Morr.*1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 115, *Lithophane*.1887. Grt., Can. Ent., XIX, 54, *Lithophane*.

HABITAT.—Massachusetts; New York.

The type is in the Tepper collection.

X. oregonensis Harv.1876. Harv., Can. Ent., VIII, 55, *Lithophane*.

HABITAT.—Oregon; California; Colorado.

The type is in the Hy. Edwards collection.

X. georgii Grt.*1875. Grt., Can. Ent., VII, 188, *Lithophane*.1887. Grt., Can. Ent., XIX, 55, *Lithophane*.

HABITAT.—Canada; Maine; New York; Northern and Eastern States; Colorado.

The type is in the British Museum.

X. antennata Wlk.*1858. Wlk., C. B. Mus., Het., XIV, 1733, *Xylina*.1883. Saund., Fruit Insects, 138, f. 138, *Lithophane*.
cinerea Riley.1871. Riley, 3d Rept. Ins. Mo., 135, f. 57, *Xylina*.1874. Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane*.

1879. Grt., Bull. Geol. Surv., v, 201, pr. syn.

1881. Riley, Index and Suppl. to Mo. Repts., 74, *Lithophane*.

1882. Riley, Papilio, II, 43, 101, an sp. dist.?

1882. Fernald, Papilio, II, 63, pr. syn.

1891. Butler, Entomologist, XXIV, 242, pr. syn.

HABITAT.—Canada to District of Columbia; west to Nebraska.

Walker's type is in the British Museum and Dr. Riley's specimens are in the National Museum. The species has an economic bibliography not included here.

X. laticinerea Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 27, *Lithophane*.

1882. Riley, Papilio, II, 102, an var. *antennata*.

1883. Hy. Edw., Papilio, III, 135, larva.

1891. Butler, Entomologist, XXIV, 242, = *antennata*.

HABITAT.—With *antennata*.

The type is in the British Museum.

X. grotei Riley.*

1882. Riley, Papilio, II, 102, an var. *antennata*.

1887. Grote, Can. Ent., XIX, 54, *Lithophane*.

cinerosa, ♀ Grt.

1879. Grt., Bull. Geol. Surv., V, 202, *Lithophane*.

1882. Riley, Papilio, II, 102, *nomen bis lectum*.

HABITAT.—With *antennata*.

Mr. Grote's type is in the British Museum. Dr. Riley's name has the same type. I keep the names *antennata*, *laticinerea*, and *grotei* as representing distinct species, pending a critical study of the genus. It is not at all impossible that distinctive characters can be found which need not be "imagined," as Mr. Butler suggests they would be.

X. unimoda Lint.*

1878. Lint., Ent. Cont., IV, 96, *Xylina*.

HABITAT.—Canada; New York in October; Vermont; Northern and Eastern States.

The type is in the Hill collection.

X. tepida Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 27, *Lithophane*.

HABITAT.—Massachusetts; New York; Northern and Eastern States. A type is in the British Museum; another in the Tepper collection.

X. baileyi Grt.³

1877. Grt., Can. Ent., IX, 86, *Lithophane*.

HABITAT.—New York.

The type is in the British Museum.

X. querquera Grt.*

1874. Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, pl. 1, f. 5, *Lithophane*.

1882. Grt., Ill. Essay, 57, pl. 2, f. 21, *Lithophane*.

HABITAT.—Missouri; New York.

The type is in the British Museum.

X. viridipallens Grt.

1877. Grt., Can. Ent., IX, 215, *Lithophane*.

1878. Grt., Bull. Geol. Surv., IV, 180, *Lithophane*.

1882. Grt., Ill. Essay, 57, pl. 2, f. 22, *Lithophane*.

HABITAT.—Massachusetts; New York.

A type is in the British Museum; another is in Dr. Thaxter's collection.

X. lepidæ Lint.*1878. Lint., Ent. Cont., iv, 95, *Xylina*.1878. Grt., Bull. Geol. Surv., iv, 181, *Lithophane*.

HABITAT.—Canada; Maine; New York.

The type is in the Hill collection.

X. thaxteri Grt.*1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 196, *Lithophane*.1875. Grt., List Noctuidæ, pl. f. 3, *Lithophane*.1876. Speyer, Stett. Ent. Zeit., 1876, 203, an var. *lambda*.1878. Lint., Ent. Cont., iv, 127, an var. *lambda*.1882. Grt., Proc. Am. Phil. Soc., xxi, 160, ♀ an var. *conformis*.1891. Butler, Entomologist, xxiv, 263, = *lambda*.

HABITAT.—Canada; Maine; Massachusetts; New York.

The type is in the British Museum. There is very good authority for making this a synonym or at least a variety of *lambda*; but I do not feel ready to admit the identity without a more critical study than has yet been made.

X. pexata Grt.*1874. Grt., 6th Rept. Peab. Ac. Sci., 35, *Lithophane*.1878. Graef, Bull. Bkln. Ent. Soc., i, 10, = *ingrica*.1883. Grt., Proc. Am. Phil. Soc., xxi, 160, ♀ = *ingrica*.var. *washingtonia* Grt.1883. Grt., Papilio, iii, 74, *Lithophane*.

HABITAT.—Canada; Northern, Eastern, and Middle States; Washington.

The type of the species is in the British Museum; that of the variety is with Mr. Neumøgen.

X. capax G. & R.*1868. G. & R., Trans. Am. Ent. Soc., i, 355, pl. 7, f. 57, *Xylina*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 145, *Anytus*.1878. Grt., Bull. Geol. Surv., iv, 180, *Lithophane*.

HABITAT.—Canada; Northern, Eastern and Middle States; Colorado.

A specimen marked type, by Mr. Grote, is in the British Museum. The species is certainly not a *Xylina*, but seems to be congeneric with *Polia acutissima*. As the latter is not a *Polia*, nothing would be gained in accuracy by getting *capax* into that genus at present.

X. carbonaria Harv.*1876. Harv., Can. Ent., viii, 55, *Lithophane*.

HABITAT.—Oregon; California; Colorado.

The type is in the Hy. Edwards collection. This also must be removed from *Xylina*, the species affording a quite remarkable structural character.

X. patefacta Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1733, *Xylina*.

HABITAT.—Canada.

The type is at Oxford, in the Saunders collection.†

Genus **NYSTALEA** Gn.

1852. Gn., Spec. Gen., Noct., II, 122.

N. indiana Grt.1884. Grt., Papilio, IV, 7, *Nystalea*.1891. Smith, List Lepidoptera, 50, an *Bombycia* ?

HABITAT.—Indian River, Florida.

The type is in Mr. Neumægen's collection. I have seen it and believe it a *Bombycia*, but have not had an opportunity of studying the specimen. It is certainly not a *Nystalea*, of which I saw several species in the Berliner Museum.

Genus **MORRISONIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53.

The genera *Morrisonia* and *Xylomiges* have been monographically treated by me in the Proc. U. S. National Museum for 1892, vol. XV, pp. 64–86. All the species are there described; but specific reference to this paper is here made only when necessary to accredit a species or authenticate a generic change.

M. mucens Hbn.*1816. Hbn., Verzeichniss, 243, *Septis*.1825. Hbn., Zutræge, III, 25, f. 415, 416, *Septis*.1852. Gn., Spec. Gen., Noct., I, 142, *Xylophasia*.1856. Wlk., C. B. Mus., Het., IX, 177, *Xylophasia*.1861. H. Sch., Corr. Blatt, II, 74, *Xylomiges*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 110, *Hadena*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 28, *Xylomiges*.1879. Grt., Can. Ent., XI, 206, *Mamestra*.1880. Grt., Can. Ent., XII, 117, *Mamestra*.1892. Smith, Proc. U. S. Nat. Mus., XV, 79, *Morrisonia*.
spoliata Wlk.1857. Wlk., C. B. Mus., Het., XI, 759, *Xylina*.

HABITAT.—Middle, Southern, and Central States; Texas, March 10 to April 2; Missouri, March 25 to April 19.

The type of *spoliata* is in the British Museum and is this common Southern species. The locality given was "East Florida."

M. rileyana Smith.*1890. Smith, Ent. Amer., VI, 212, *Morrisonia*.

HABITAT.—Missouri in April; Texas in March.

The type is in the National Museum.

† Mr. Schaus has sent me a figure which proves the species a good one, allied to *insomniata* m., (signosa† Grt.). I have a specimen from Canada.

M. bisulca Grt.*1881. Grt., Can. Ent., XIII, 230, *Mamestra*.1891. Smith, List Lepidoptera, 50, *Morrisonia*.

HABITAT.—Arizona.

Types are in the Neumögen collection and in the British Museum.

M. sectilis Gn.*1852. Gn., Spec. Gen., Noct., I, 141, *Xylophasia*.1856. Wlk., C. B. Mus., Het., IX, 177, *Xylophasia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 109, *Hadena*.1891. Butler, Entomologist, XXIV, 264, = *mucens*.
evicta Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 84, pl. II, f. 18, *Cloantha*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 16, *Actinotia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53, *Morrisonia*.
var. *vomerina* Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 84, pl. II, f. 17, *Cloantha*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 16, *Actinotia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53, *Morrisonia*.

1879. Grt., Can. Ent., XI, 207, an var. pr. ♀

1890. Grt., Revised Check List, 24, pr. var.

HABITAT.—Middle and Central States; Canada, New York, and New Jersey, in April and May; Illinois, April and October.

All the types are in the British Museum. Mr. Butler has erroneously referred *sectilis* to *mucens*. The type is a poor specimen of the normal form of *evicta*. It would have been utterly impossible to recognize this species from the description alone.**M. peracuta** Morr.*1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 114, *Morrisonia*.

HABITAT.—California or Texas.

Types are in the National Museum and in the Tepper collection. My notes indicate that there is another specimen marked "type" in the British Museum. All are without definite locality.

M. infidelis Grt.1879. Grt., Can. Ent., XI, 206, *Morrisonia*.

HABITAT.—Michigan.

The type is in the British Museum, and seems to be agreeing fairly well with the description.

M. confusa Hbn.*1816. Hbn., Verzeichniss, 243, *Auchmis*.1823. Hbn., Zuträge, III, 495, 496, *Auchmis*.1852. Gn., Spec. Gen., Noct., I, 142, *Xylophasia*.1856. Wlk., C. B. Mus., Het., IX, 178, *Xylophasia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 110, *Hadena*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 12, *Mamestra*.1880. Grt., Can. Ent., XII, 118, *Mamestra*.

1892. Smith, Proc. U. S. Nat. Mus., xv, 85, *Morrisonia*.
infructuosa Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 627, *Xylina*.
multifaria Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 628, *Xylina*.

HABITAT.—Canada to Texas to California. United States generally; Eastern States in April and May.

Walker's types are in the British Museum, and are more or less imperfect specimens of this common species.†

Genus **XYLOMIGES** Gn.

1852. Gn., Spec. Gen., Noct., i, 147.

X. hiemalis Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 71, *Xylomiges*.
californica Behr.
 1874. Behr, in Strk. Lep. Rhop. et Het., 94, *Dryobota*.
 1876. Grt., Can. Ent., viii, 26, pr. syn.
 1878. Grt., Bull. U. S. Geol. Surv., iv, 178, *Xylomiges*.
 1879. Grt., Can. Ent., xi, 29, pr. syn

HABITAT.—California in January.

The type is in the British Museum.

X. peritalis Smith.

1892. Smith, Proc. U. S. Nat. Mus., xv, 68, *Xylomiges*.

HABITAT.—Colorado; Oregon.

The type is in the Neumœgen Collection.

X. simplex Wlk.*

1865. Wlk., C. B. Mus., Het., xxxii, 618, *Acronycta*.
crucialis Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., ii, 277, *Xylomiges*.

HABITAT.—Vancouver; California; Colorado in May and October; Portland, Oregon, April and May.

The types of both names are in the British Museum. I failed to see the type of *simplex* in the British Museum, as it was not ranged among the true noctuids of Mr. Butler's first study. Afterward, Mr. Butler very kindly sent me a figure of the species which made it certain that it was no *Acronycta*, but was too sketchy to make out positively. Yet later Mr. Butler stumbled on *Xylomiges crucialis* Harv., and recognized in it Walker's *Acronycta simplex*.

X. curialis Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 143, *Xylomiges*.

HABITAT.—California in March.

The type is in the Museum of Comparative Zoölogy at Cambridge.

† See note on p. 174.

X. dolosa Grt.*1880. Grt., Can. Ent., XII, 88, *Xylomiges*.

HABITAT.—Maine; Plattsburgh, New York; White Mts., New Hampshire; Colorado.

The type is in the British Museum.

X. rubrica Harv.*1878. Harv., Can. Ent., x, 58, *Graphiphora*.1882. Grt., New Check List, 31, *Xylomiges*.1887. Smith, Proc. U. S. Nat. Mus., x, 462, *Mamestra*.1892. Smith, Proc. U. S. Nat. Mus., xv, 72, *Xylomiges*.

HABITAT.—California in May; Oregon in May.

The type is in the British Museum.

X. perlubens Grt.*1881. Grt., Can. Ent., XIII, 132, *Xylomiges*.1892. Smith, Proc. U. S. Nat. Mus., xv, 71, *Xylomiges*
subapicalis Smith.1887. Smith, Proc. U. S. Nat. Mus., x, 462, *Mamestra*.1892. Smith, Proc. U. S. Nat. Mus., xv, 73, *Xylomiges*.

HABITAT.—Colorado; Washington; California in June; Portland, Oregon, April and May.

Mr. Grote's type is in the British Museum and is like my *subapicalis*, the type of which is in the National Museum. I suspected the identity of the two, but could not make Mr. Grote's description fit sufficiently well to risk the identification.**X. ochracea** Riley.*1892. Riley, Proc. U. S. Nat. Mus., xv, 74, *Xylomiges*.

HABITAT.—California, October, November.

The types are in the U. S. National Museum.

X. patalis Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 144, pl. IV, f. 11, *Xylomiges*
fletcheri Grt.1888. Grt., Can. Ent., xx, 130, *Xylomiges*.

1891. Smith, List Lepidoptera, 50, pr. syn.

HABITAT.—Vancouver; California in April, May, June, and November.

The type of *patalis* is in the Museum of Comparative Zoölogy at Cambridge; that of *fletcheri* I have not seen; but there is a specimen under this name received from Mr. Fletcher as typical, in the National Museum, which is not in the least different from typical *patalis*.**X. tabulata** Grt.1878. Grt., Bull. U. S. Geol. Surv., IV, 181, *Xylomiges*.1892. Smith, Proc. U. S. Nat. Mus., xv, 76, † *Xylomiges*.

HABITAT.—New York.

The types are in the British Museum and in the Hill collection. Both are females and look like a *Mamestra* allied to *anguina*. It will require a male to decide the generic location.

Genus **LITHOMIA** Hbn.1816. Hbn., *Verzeichniss*, 244.**L. germana** Morr.*1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 192, *Calocampa*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 198, *Lithomia*.1878. Gräf, Bull. Bkln. Ent. Soc., I, 10, =*solidaginis*.1883. Grt., Proc. Am. Phil. Soc., XIX, 160, =*solidaginis*.
solidaginis ‡ Wlk.1857. Wlk., C. B. Mus., Het., XI, 618, 759, *Lithomia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 27, *Calocampa*.

HABITAT.—Hudson Bay Territory; Northern and Eastern States; New York, September.

I have not seen the type, nor do I know where it is at present. It may be that the American is the same as the European species; but I am not sufficiently convinced of it to make the reference.

Genus **PLEROMA** Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 113.

P. obliquata Smith.*1891. Smith, Trans. Am. Ent. Soc., XVIII, 114, *Pleroma*.

HABITAT.—Colorado; Sierra Nevada, California.

The type is in the National Museum; duplicates are in the Edwards and Neumœgen collections.

P. conserta Grt.1881. Grt., Papilio, I, 58, *Valeria*.

HABITAT.—Washington.

The type is in the British Museum. It is an ally of my species, but more suffused with blackish than any specimen I have seen. The type of maculation is identical and the relationship is close.

Genus **CALOCAMPA** Steph.

1829. Steph., Ill. Brit. Ent., Haust., II, 174.

C. nupera Lint.*1874. Lint., Bull. Buff. Soc. Nat. Sci., II, 188, *Calocampa*.1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 190, *Calocampa*.1878. Thaxter, Psyche, II, 122, larva.
rectusta ‡ Wlk.1857. Wlk., C. B. Mus., Het., XI, 619, *Calocampa*.1874. Grt., 6th Rept. Peab. Ac. Sci., 22, *Calocampa*.

1874. Lint., Bull. Buff. Soc. Nat. Sci., II, 180, pr. syn.

HABITAT.—Hudson Bay territory, southward to District of Columbia, west to Nebraska, April, May, September, October.

The type is in Dr. Lintner's collection.

C. cineritia Grt.*1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 210, *Calocampa*.1882. Grt., Illustrated Essay, 58, pl. 2, p. 23, *Calocampa*.
var. *thoracica* Put. Cram.

1886. Putman-Cramer, Ent. Amer., II, 142, var. pr.

HABITAT.—Canada; New Hampshire; New York, April and May; west to Colorado; Portland, Oregon, April and May.

The type of the species is in the British Museum; that of the variety is now in Mr. Doll's collection, I believe.

C. brucei Smith.*1892. Smith, Ent. News, III, 252, pl. x, *Calocampa*.

HABITAT.—Colorado, front range of Rocky Mountains.

The types are in the National Museum and in the Rutgers College collection.

C. curvamacula Morr.*1874. Morr., Bull. Buff. Soc. Nat. Sci., II, 191, *Calocampa*.

1878. Thaxter, Psyche, II, 122, larva.

HABITAT.—Canada; Northern and Eastern States; New York, May and September; Portland, Oregon, in April.

I have not seen the type and do not know where it is at present.

Genus **CLEOPHANA** Bdv.

1832. Bdv., Chen. d'Europe, 151.

C. eulepis Grt.1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 86, *Cleophana*.1876. Grt., Stett. Ent. Zeit., XXXVII, 136, *Cleophana*.1883. Grt., Proc. Am. Phil. Soc., XXI, 161, *Cleophana*.

HABITAT.—Oregon; California.

The type is in the Hy. Edwards collection.

C. antipoda Streck.*1875. Streck., Lep. Rhop. et Het., 129, *Cucullia*.1880. Grt., Can. Ent., XII, 217, *Cleophana*.

HABITAT.—Colorado; Arizona.

The type is in the Strecker collection.

Genus **CUCULLIA** Schrank.

1802. Schrank, Fauna Boica, II, 157.

A monographic revision of this genus will be found in the Proceedings U. S. National Museum for 1892, vol. xv, pp. 32–51, where all the species are fully discussed. Reference to this paper is made only where necessary to accredit a species or authenticate a change.

C. convexipennis G. & R.*1868. Grt. & Rob., Trans. Am. Ent. Soc., II, 201, pl. III, f. 76, *Cucullia*.1869. Bethune, Can. Ent., I, 86, *Cucullia*.1874. Lintner, Ent. Cont., III, 138, 170, *Cucullia*.

HABITAT.—Canada; New York in July and August, to Pennsylvania; Ohio; Delaware in August.

I have not seen the type; but the species is unmistakable.

C. montanæ* Grt.

1882. Grt., Can. Ent., xiv, 175, *Cucullia*.

HABITAT.—Colorado in June; Montana.

The type is in the Neumøgen collection.

C. similis* Smith.

1892. Smith, Proc. U. S. Nat. Mus., xv, 40, *Cucullia*.

HABITAT.—Colorado, 6,500 feet; Denver in June.

The type is in the National Museum.

C. obscurior* Smith.

1892. Smith, Proc. U. S. Nat. Mus., xv, 40, *Cucullia*.

HABITAT.—Colorado.

The type is in the National Museum.

C. asteroides* Gn.

1852. Gn. Spec. Gen., Noct., II, 133, *Cucullia*.

1857. Wlk., C. B. Mus., Het., XI, 656, *Cucullia*.

1874. Lintner, Ent. Cont., III, 139, 169, *Cucullia*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 154, *Cucullia*.

HABITAT.—Canada to Virginia to Nebraska. New York in May, June, July, and August; New Jersey in May; Washington, D. C., in August; Nebraska in May.

A type is in the British Museum.

C. postera* Gn.

1852. Gn., Spec. Gen., Noct., II, 133, *Cucullia*.

1857. Wlk., C. B. Mus., Het., XI, 656, *Cucullia*.

1874. Lintner, Ent. Contr., III, 169, *Cucullia*.

HABITAT.—New Hampshire, July; New York, July; New Jersey.

The type is in the British Museum.

The distribution is probably coincident with that of *asteroides*.

C. florea* Gn.

1852. Gn., Spec. Gen., Noct., II, 133, *Cucullia*.

1857. Wlk., C. B. Mus., Het., XI, 656, *Cucullia*.

1874. Lintner, Ent. Cont., III, 169, *Cucullia*.

HABITAT.—With *postera* and at same dates.

The type is in the British Museum.

C. lætifixa* Lint.

1875. Lintner, in Grote's Check List Noct., 24, *Cucullia*.

1878. Lintner, Ent. Cont., IV, 98, *Cucullia*.

cita Grt.1883. Grt., Papilio, III, 75, *Cucullia*.

1892. Smith, Proc. U. S. Nat. Mus., xv, 44, pr. syn.

hartmanni French1888. French, Can. Ent., xx, 69, *Cucullia*.

1892. Smith, Proc. U. S. Nat. Mus., xv, 44, pr. syn.

HABITAT.—Arizona; Texas in April.

Dr. Lintner's types are in the National Museum and in his own collection; the type of *cita* is in the Neumögen collection, while that of *hartmanni* is with Prof. French.

C. speyeri Lint.*1874. Lintner, Ent. Cont., III, 168, figs. 13 and 14, *Cucullia*.

HABITAT.—Canada to Pennsylvania; west to Nebraska; New York, June and August; Nebraska in May.

Types are in Dr. Lintner's collection.

C. dorsalis Smith.*1892. Smith, Proc. U. S. Nat. Mus., xv, 46, *Cucullia*.

HABITAT.—Colorado, Denver in June, Glenwood Springs in September.

The type is in the National Museum.

C. bistriga Smith.*1892. Smith, Proc. U. S. Nat. Mus., xv, 47, *Cucullia*.

HABITAT.—Colorado.

Types are in the Neumögen collection and in the National Museum.

C. intermedia Speyer.*1870. Speyer, Stett. Ent. Zeit., xxxi, 400, *Cucullia*.1872. Lintner, Ent. Cont., I, 81, 85, pl. VIII, figs. 5, 7, *Cucullia*.1874. Lintner, Ent. Cont., III, 170, *Cucullia*.1875. Speyer, Stett. Ent. Zeit., xxxvi, 155, *Cucullia*.1878. Lintner, Ent. Cont., IV, 125, *Cucullia*.*umbratica* ‡ Gn.1852. Gn., Spec. Gen., Noct., II, 147, *Cucullia*.

1870. Speyer, Stett. Ent. Zeit., xxxi, 400, pr. syn.

HABITAT.—Canada to Virginia; Central States; New York in May, July, and August; Delaware in August.

I have not seen the type.

C. cinderella Smith.*1892. Smith, Proc. U. S. Nat. Mus., xv, 48, *Cucullia*.

HABITAT.—Colorado, Glenwood Springs in September.

The type is in the National Museum.

C. serraticornis Lint.*1874. Lintner, Ent. Cont., III, 174, *Cucullia*.1875. Lintner, in Grote's Check List Noct., pl., fig. 10, *Cucullia*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 161, *Cucullia*.

matricaria Behr.

1874. Behr, in Strk., Lep. Rhop. et Het., 94, *Cucullia*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 218, pr. syn.

HABITAT.—California.

The type is in Dr. Lintner's collection.

C. solidaginis Behr.

1874. Behr, in Strk. Lep. Rhop. et Het., 94, *Cucullia*.

1892. Smith, Proc. U. S. Nat. Mus., XV, 51, *Cucullia*.

HABITAT.—California.

I have not seen the type and have not been able to identify the species satisfactorily.

Genus **EUTELIA** Hbn.

1816. Hbn., Verzeichniss, 259.

E. pulcherrima Grt.

1865. Grt., Proc. Ent. Soc. Phil., IV, 326, *Ripogenus*.

1882. Grt., Can. Ent., XIV, 183, *Ripogenus*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 161, *Ripogenus*.

dentifera Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 818, *Eutelia*.

HABITAT.—New York; New Jersey.

The types are in the British Museum, and refer to the same species. Both names were published in 1865, but I think Mr. Grote's name antedates the other somewhat. At all events it is the most meritorious. Mr. Neumögen also has "type" specimens.

Genus **MARASMALUS** Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 89.

M. inficita Wlk.*

1865. Wlk., C. B. Mus., Het., XXXIII, 818, *Eutelia*.

histrio Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 297, *Marasmalus*.

HABITAT.—Canada to Texas; west to Nebraska; Colorado, June and July; Kansas in July.

Both types are in the British Museum and refer to the same species. This time Mr. Walker has the clear priority.

M. ventilator Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 89, *Marasmalus*.

1879. Grt., Can. Ent., XI, 179, *Marasmalus*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 162, *Marasmalus*.

HABITAT.—With the preceding, June and July.

The type is in the British Museum. This is the larger and brighter of the two species.

Genus **INGURA** Gn.

1852. Gn., Spec. Gen., Noct., II, 309.

I. declinata Grt.*1879. Grt., Can. Ent., XI, 208, *Ingura*.**HABITAT.**—California in August; Colorado.

The type is in the British Museum.

I. delineata Gn.*1852. Gn., Spec. Gen., Noct., II, 311, *Ingura*.1857. Wlk., C. B. Mus., Het., XII, 857, *Ingura*.**HABITAT.**—Canada to Alabama, to Illinois; Missouri; Massachusetts in July.

The species is described after a drawing by Abbott, which I have not seen. I think there is little doubt of the correctness of the identification which Mr. Grote has made in American collections.

I. abrostoloides Gn.*1852. Gn., Spec. Gen., Noct., II, 311, *Ingura*.1857. Wlk., C. B. Mus., Het., XII, 875, *Ingura*.*producta* Wlk.1855. Wlk., C. B. Mus., Het., v, 1031, *Edema*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 29, † var. *declinata*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 311, † pr. syn.

HABITAT.—With the preceding, but more rare. July.

I have not seen Guenée's type, which is with Mr. Oberthür. Walker's type is in the British Museum and is the species Mr. Grote has—I think correctly—identified as *abrostoloides*.

I. fuscescens Wlk.*1855. Wlk., C. B. Mus., Het., v, 1031, *Edema*.1868. G. & R., Trans. Am. Ent. Soc., II, 73, *Ingura*.*abrostella* Wlk.1866. Wlk., C. B. Mus., Het., xxxv, 1744, † *Subrita*.*præpilata* Grt.1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 311, *Ingura*.**HABITAT.**—Texas in April and May; Mississippi; New Mexico.

All the types are in the British Museum. Mr. Grote's type is of the Belfrage material, and exact duplicates from the same collector are in the National Museum. Mr. Neumøgen has also a "type" of Mr. Grote's species. Walker's *abrostella* was described as a Crambit.

I. flabella Grt.1879. Grt., Can. Ent., XI, 208, *Ingura*.**HABITAT.**—Kansas.

The type is in the British Museum.

I. oculatrix Gn.*

1852. Gn., Spec. Gen., Noct., II, 313, *Ingura*.
 1857. Wlk., C. B. Mus., Het., XII, 875, *Ingura*.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 162, *Ingura*.

HABITAT.—Eastern, middle, and central States; Canada; New York in July.

The species was described from the Saunders collection and the type is probably at Oxford. I think there is no doubt of the correctness of the identification made by Mr. Grote.

I. pygmaea Hbn.

1818. Hbn., Zuträge, 21, ff. 109, 110, *Pactes*.
 1880. Grt., Can. Ent., XII, 87, *Ingura*.

HABITAT.—Georgia.

This species is not yet identified in our collections so far as I know. I have not tried to compare the figure carefully.

I. cristatrix Gn.

1852. Gn., Spec. Gen., Noct., II, 313, *Ingura*.
 1857. Wlk., C. B. Mus., Het., XII, 875, *Ingura*.

HABITAT.—America?

Guenée describes his species as from the Coll. Cie des Indes and suggests that it may be East Indian. But he makes the same suggestion also as to *oculatrix* and it does not mean much positive knowledge. I have not tried seriously to recognize the species.

Genus **ANOMIS** Hbn.

1816. Hbn., Verzeichniss, 249.

A. erosa Hbn.*

1818. Hbn., Zuträge, 19, ff. 287, 288, *Anomis*.
 1816. Hbn., Verzeichniss, 249, *Anomis*.
 1852. Gn., Spec. Gen., Noct., II, 395, *Cosmophila*.
 1880. Grt., Can. Ent., XII, 116, *Anomis*.
 1882. Riley, Rept. Ent. Dept. Agl., 1881-'82, 167, pl. 8, f. 1, *Anomis*.
 1885. Riley, 4th Rept. U. S. Ent. Comm., 345, pl. II, ff. 1, 2, 3, *Anomis*.

HABITAT.—Massachusetts, in August; District of Columbia and southward; Kansas in September.

Full life histories of this species can be found in the two reports by Dr. Riley, where all stages are acceptably figured. By the dates given it is evident that either the Verzeichniss was not published until 1818, or the names to be given were anticipated in that publication.

A. exacta Hbn.*

1810. Hbn., Saml. Ex. Schmett., II, pl. 411, *Anomis*.
 1816. Hbn., Verzeichniss, 249, *Anomis*.
 1852. Gn., Spec. Gen., Noct., II, 399, *Anomis*.
 1857. Wlk., C. B. Mus., Het., XIII, 989, *Anomis*.
 1868. H. Sch., Corr. Blatt, 1868, Cuba, p. 16, *Anomis*.
 1885. Riley, 4th Rept. Ent. Comm., 350, *Anomis*.

HABITAT.—Southern United States.†

Dr. Riley questions Mr. Grote's identification of this species, and calls our American form *texana*. He is probably correct in this; but as I have not studied the question, I give the bibliography necessary to put the student on the track.

A. texana Riley.*

1885. Riley, 4th Rept. Ent. Comm., 350, app. 120, pl. ii, ff. 4, 5, and 6, *Anomis*.

HABITAT.—Texas; Southern United States.

Dr. Riley proposes this name to replace *exacta* Grt., not Hübner. The figure given is excellent, and leaves no doubt as to the species intended. The types are in the National Museum.

A. luridula Gn.*

1852. Gn., Spec. Gen., Noct., II, 401, *Anomis*.

1857. Wlk., C. B. Mus., Het., XIII, 988, *Anomis*.

1868. H-Sch., Corr. Blatt, 1868, Cuba, 16, *Anomis*.

1883. Gundlach, Cont. Ent. Cub., 324, *Anomis*.

1892. Butler, Entomologist, XXV, 12, *Anomis*.
derogata Wlk.

1857. Wlk., C. B. Mus., Het., XIII, 990, *Anomis*.

1892. Butler, Entomologist, XXV, 13, pr. syn.

HABITAT.—Gulf States; West Indies; Venezuela.

Luridula Gn., and *derogata* Wlk., based on typical specimens in the British Museum, are one species. There is not even the varietal difference between them that Mr. Butler seems to suspect, unless very slight difference in maculation makes a variety. Under that definition almost every specimen would be a variety, so I can not quite understand what Mr. Butler's remark (*l. c.*, p. 13) was intended to mean.

A. conducta Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 990, *Anomis*.

1892. Butler, Entomologist, XXV, 13, *Anomis*, = *illita*.
hostia Harv.

1876. Harv., Can. Ent., VIII, 6, *Aletia*.

1892. Butler, Entomologist, XXV, 13, pr. syn.

HABITAT.—Texas.

The types are in the British Museum. The species is much more common in Central and South America, and probably only occasional in the Southern United States. Mr. Butler would see in this the true *Aletia argillacea* of Hübner, and so cites it in the Entomologist, *l. c. supra*. I do not follow Mr. Butler's references to *illita* Gn., because I believe that to be another species. One of the types is in the Jardin des plantes in Paris, while none is in the British Museum. I did not directly compare the specimens, but Guenée's species looked different. I do know that the synonymy above is correct as far as it goes.

Genus **ALETIA** Hbn.

1816. Hbn., Verzeichniss, 239.

A. argillacea Hbn.*

1820. Hbn., Zutræge, ff. 399, 400, *Aletia*.
 1856. Wlk., C. B. Mus., Het., ix, 79, *Mythimna*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 122, 170, *Aletia*.
 1879. Comstock, Cotton Insects, i, 284, pl. 1, *Aletia*.
 1880. Grt., Can. Ent., xii, 117, *Aletia*.
 1892. Butler, Entomologist, xxv, 13, *Aletia*.
rylina Say.
 1828. Say, Southern Agriculturist, i, 203, *Noctua*.
 1859. Say, American Ent., Lec. ed., i, 370, *Noctua*.
 1864. Grt., Proc. Ent. Soc. Phil., iii, 541, *Anomis*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 170, pr. syn.
 1880. Grt., Can. Ent., xii, 117, pr. syn.
 1881. Riley, Papilio, i, 107, an sp. dist.
 1885. Riley, 4th Rept. Ent. Comm., pp. 1-344, pl., *Aletia*.
grandipuncta Gn.
 1852. Gn., Spec. Gen., Noct., ii, 400, *Anomis*.
 1857. Wlk., C. B. Mus., Het., xiii, 989, *Anomis*.
 1868. Bethune, Can. Ent., i, 87, *Anomis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 24, pr. syn.
bipunctina Gn.
 1852. Gn., Spec. Gen., Noct., ii, 400, *Anomis*.
 1857. Wlk., C. B. Mus., Het., xiii, 980, *Anomis*.
 1864. Grt., Proc. Ent. Soc. Phil., iii, 541, = *rylina*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 170, pr. syn.

HABITAT: Canada occasional, south to Central Southern and Gulf States; Central and South America.

I have seen none of the types. *Bipunctina* was described from a figure by Abbot and has no type; *grandipuncta* was described from specimens in the Saunders & Guenée collections. The types are, therefore, probably one of them at Oxford, the others at Rennes with M. Oberthür. The bibliography given is a mere outline. In Comstock's Cotton Report of 1879 and in the 4th Rept. of the United States Entomological Commission a full bibliography covering several pages is given. In these publications all possible information concerning the species will be found. Concerning the synonymy adopted, a few words may be necessary. Prof. Comstock accepted Mr. Grote's dictum on authority, while suggesting that it was not beyond doubt. Dr. Riley does not accept Mr. Grote's identification at all, and goes at some length into the reasons for declining to do so. Unfortunately, with a large material at command, he yet failed to find a species to which he was willing to apply Hübner's figure positively. Mr. Butler says, "I can not admit this identification of *argillacea*," referring to its union with *rylina* Say. He refers to *argillacea*, *illita* Gn., *conducta* Wlk., and *hostia* Harv. *Hostia* and *conducta* are synonymous from my own examination of the types. Of *illita* I am not certain; but I feel very firmly convinced that Hübner did not have this form before him to be figured.

Some four or five years ago I examined, at Dr. Riley's request, a very large series of Anomids, largely South American, in comparison with a number of type specimens from the Paris collections and with the descriptions of all the species. The material was larger than any I have seen elsewhere or since, and after the most careful comparisons I then concluded that Hübner could have had no other than Say's *xylina* before him as original to his figure. There are certain specific characters that are seen in *xylina* and in no other species, and these characters are given by Hübner. The figure is bad and the color is bad; but neither are worse than a hundred others which are accepted unquestioned, and the specific features given are those of *xylina* and of no other species. The very great majority of early figures are no more accurate than is Hübner's *argillacea*, but where there are not closely related species the matter is immaterial. In this instance I believe Mr. Grote most clearly in the right.

Genus **PTERÆTHOLIX** Grt.

1873. Grt., Trans. Am. Ent. Soc., IV, 298.

P. bullula Grt.*

1873. Grt., Trans. Am. Ent. Soc., IV, 299, *Pterætholix*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 163, *Pterætholix*.

HABITAT.—Alabama and Southern States; Texas in October to December.

The specimen in the British Museum does not seem to be the type; but is from the Grote collection and is the same as the specimens so named in the National Museum. Mr. Butler says, Entomologist xxy, 11, that this is the same genus as *Berresa* Wlk., Het. XVI, 214. I did not see the specimens and am not ready to accept the reference.

Genus **AMYNA** Gn.

1852. Gn., Spec. Gen., Noct., I, 406.

A. orbica Morr.*

1874. Morr., Proc. Bost. Soc. N. H., XVII, 216, *Segetia*.
tecta Grt.

1876. Grt., Can. Ent., VIII, 190, *Chytoryza*.

1878. Grt., Can. Ent., x, 233, *Chytoryza*.

1891. Smith, List Lepidoptera, 51, pr. syn.

HABITAT.—Texas; Kansas in October.

Somewhere I have seen Mr. Morrison's type, which is the same species as Mr. Grote's type of *tecta* in the British Museum. It is quite likely that Mr. Morrison's name must eventually sink in favor of one of the Guenée or Walker names. In the British and other European museums are a number of Central and South American species, very closely allied, which much resemble our own insect. In fact there were so many names and so little difference in the specimens that I felt unwilling to identify the Texan form with any of them. *Ilattia* is another generic synonym.

Genus **LITOPROSOPUS** Grt.

1869. Grt., Trans. Am. Ent. Soc. II, 309.

L. futilis G. & R.*1868. G. & R., Trans. Am. Ent. Soc., II, 202, pl. iii, f. 73, *Dyops*.1869. Grt., Trans. Am. Ent. Soc., II, 309, *Litoprosopus*.1881. Grt., Bull. Geol. Surv., VI, 271, *Litoprosopus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 163, *Litoprosopus*.

HABITAT.—Florida; Georgia.

I have not seen the type, nor do I know where it is.

L. configens Wlk.1857. Wlk., C. B. Mus., Het., XII, 856, *Dyops*.1869. Grt., Trans. Am. Ent. Soc., II, 309, *Litoprosopus*.

HABITAT.—West Indies; Central and South America.

The type is in the British Museum. I have seen no specimens from our fauna, nor do I find any record of such. I follow Mr. Grote in listing it, without a knowledge of why he did so. He also lists *hatuey* Poey, but this is explained by him and the species is not claimed from fauna.

Genus **DIATEMA** Gr.

1852. Gn., Spec. Gen., Noct., II, 317.

D. tigris Gn.1852. Gn., Spec. Gen., Noct., II, 317, *Diastema*.1857. Wlk., C. B. Mus., Het., XII, 879, *Diastema*.1892. Butler, Entomologist, XXV, 11, *Nipista*.
lineata Wlk.1857. Wlk., C. B. Mus., Het., XII, 800, *Nipista*.

1892. Butler, Entomologist, XXV, 11, pr. syn.

HABITAT.—Florida.

Both types are in the British Museum, and Mr. Butler is correct in uniting them. He thinks *tigris* not congeneric with *Diastema virgo* and therefore adopts Walker's generic name. My ideas of genera do not always agree with Mr. Butler's, and I prefer therefore to retain Guenée's genus until I can make comparisons myself.

Genus **OGDOCONTA** Butler.

1891. Butler, Ann. & Mag. Nat. Hist., 1891, 462.

O. cinereola Gn.*1852. Gn., Spec. Gen., Noct., II, 316, pl. 15, f. 1, *Placodes*.1853. H. Sch., Lepid. Exot., 68, f. 215, *Placodes*.1856. H. Sch., Schmett. Eur., Index, *Telesilla*.1857. Wlk., C. B. Mus., Het., XII, 878, *Placodes*.1874. Grt., Can. Ent., VI, 16, *Telesilla*.

1880. Coquillett, No. Amer. Ent., I, 52, larva.

1891. Butler, Ann. and Mag. Nat. Hist., 1891, 462, *Ogdoconta*.
atomaria Wlk.1865. Wlk., C. B. Mus., Het., XXXII, 675, *Miana*.

1882. Grt., Ill. Essay, 44, pr. syn.

HABITAT.—Canada to Texas to Minnesota; Nebraska. Canada in

June; New York, June, July, August; Illinois, August and September; Texas in April; Delaware in June.

The types are in the British Museum. Mr. Butler's characters for the genus seem good. *Navia* Harvey, belongs to *Stibadium*.

O. carneola Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 110, *Teleailla*.

1891. Smith, List Lepidoptera, 51, *Ogdoconta*.

HABITAT.—Las Vegas, New Mexico.

The type is in the Neumøgen collection.

Genus **BEHRENSIA** Grt.

1875. Grt., Can. Ent., VII, 70.

B. conchiformis Grt.

1875. Grt., Can. Ent., VII, 71, *Behrensia*.

1875. Grt., List Noctuidæ, pl., f. 6, *Behrensia*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 164, *Behrensia*.

HABITAT.—California; Portland, Oregon, April and May.

The type is in the British Museum. The species is one I had never seen before and is one of the most beautiful of our noctuids. I have since seen several specimens, all taken at light, and all of them in such poor condition that the brilliancy of the species could not be appreciated.

Genus **ABROSTOLA** Ochs.

1816. Ochs., Schmett. Eur., IV, 88.

A. ovalis Gn.

1852. Gn., Spec. Gen., Noct., II, 322, *Abrostola*.

1857. Wlk., C. B. Mus., Het., XII, 883, *Abrostola*.

HABITAT.—Canada in August; New York; New Jersey; Pennsylvania; Massachusetts in June and August.

The type is in the British Museum.

A. urentis Gn.*

1852. Gn., Spec. Gen., Noct., II, 322, pl. 11, f. 11, *Abrostola*.

1857. Wlk., C. B. Mus., Het., XII, 883, *Abrostola*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 159, *Abrostola*.

HABITAT.—Nova Scotia, southward to District of Columbia; Middle and Central States, July and August.

The type is in the British Museum.

Genus **DEVA** Wlk.

1857. Wlk., C. B. Mus., Het., XII, 962.

D. purpurigera Wlk.*

1858. Wlk., C. B. Mus., Het., XIV, 1791, *Deva*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 30, *Plusia*.

1881. Grt., Papilio, I, 35, *Deva*.

HABITAT.—Canada; New York; Colorado; New Mexico; Eastern and Northern States, June, July, August.

The type is in the British Museum.

D. palligera Grt.

1881. Grt., *Papilio*, I, 35, *Dera*.

HABITAT.—Sierra Nevada, California; Western Colorado.

Types are in the Edwards Collection and in the British Museum.

D. morigera Hy. Edw.

1887. Hy. Edw., *Euto. Amer.*, II, 169, *Dera*.

HABITAT.—South Park, Colorado.

The type is in the Edwards Collection.

Genus *PLUSIA* Ochs.

1816. Ochs., *Schmett. Eur.*, IV, 89.

Mr. Grote in his lists writes *Plusia* Fabricius, and in 1874 quoted Lederer as authority for this use. Lederer, however, says *Plusia* Treitschke; but says also *Plusia* Fabricius, for a section of the genus including those not referable to *Abrostola*; Staudinger writes *Plusia* Ochsenheimer, and this accords with what I have found in my searches among the ancients. In none of the Fabrician works is *Noctua* subdivided, though probably in the *Systema Glossatorum* this was done. It may be that Lederer derives his authority from this unpublished work; but as the matter stands Ochsenheimer must be credited with the genus.

P. ærea Hbn.*

1810. Hbn., *Schmett. Eur.*, IV, pl. 56, f. 27, *Noctua*.

1811. Oliv., *Enc. Meth.*, VIII, 318, *Noctua*.

1816. Hbn., *Verzeichniss*, 250, *Agrapha*.

1827. Dup., *Hist. Nat. Lep. Fr.*, VII, 17, pl. 133, f. 4, *Noctua*.

1829. Bdv., *Index Meth.*, 159, *Plusia*.

1832. Meigen, *Syst. Besch. Schmett. Eur.*, III, 250, pl. 121, f. 5, *Plusia*.

1852. Gn., *Spec. Gen., Noct.*, II, 333, *Plusia*.

1857. Wlk., *C. B. Mus., Het.*, XII, 890, *Plusia*.

HABITAT.—Nova Scotia, south to Florida and Texas; United States east of the Rocky mountains; New Mexico; Colorado; Canada in June and August; New York in June, August, and September; Massachusetts in July; District of Columbia in August.

This species was described as European, which accounts for the character of the bibliography. Guenée first pointed out that it was an American. Curiously enough there has been no reference requiring citation in American works.

P. æroides Grt.*

1864. Grt., *Proc. Ent. Soc. Phil.*, III, 83, et 541, pl. 2, f. 5, *Plusia*.

1874. Lintner, *Ent. Cont.*, III, 161, larva.

1876. Thaxter, *Psyche*, I, 188, larva.

HABITAT.—Canada to Texas, to Colorado. Dates as in *ærea*.
The type is in the British Museum.

P. balluca Geyer.*

1835. Geyer, Zuträge, ff. 681, 682, *Dyachrysia*.
 1852. Gn., Spec. Gen., Noct., II, 334, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 904, *Plusia*.
 1873. Saund., Can. Ent., v, 11, larva.
 1874. Lintner, Ent. Cont., III, 163, larva.
 1881. Grt., Can. Ent., XIII, 91, *Plusia*.

HABITAT.—Nova Scotia; Canada in June and July; Northern, Eastern and Middle States in July and August.

P. metallica Grt.*

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 311, *Plusia*.
bractea† Grt.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 72, *Plusia*.
 1875. Grt., Can. Ent., VII, 46, *Plusia*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 311, pr. syn.

HABITAT.—California, Mendocino in June.

The type is in the British Museum.

P. arizona French.

1889. French, Can. Ent., XXI, 161, *Plusia*.

HABITAT.—Arizona.

The type is in Prof. French's collection. If it is as close an ally of *P. howardi* Edw., as Prof. French suggests, it is not a *Plusia* at all, but a *Basilodes*. I have not seen it.

P. contexta Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 193, *Plusia*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 161, *Plusia*.
 1883. Thaxter, Papilio, III, 18, larva on grass.

HABITAT.—Maine; New York; Eastern and Middle States, June, July, August. A type is in the British Museum; another in Dr. Lintner's collection.

P. putnami Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 146 et. 192, pl. 4, f. 2, *Plusia*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 162, *Plusia*.

HABITAT.—Northern, Eastern, and Middle States; Canada; June and July; Colorado; Virginia; Portland, Oregon, May and June.

The type is in the British Museum.

P. venusta Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 836, *Plusia*.
striatella Grt.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 194, *Plusia*.

HABITAT.—Canada; Maine; New York; District of Columbia.

The type of Walker's species is in the British Museum, as is also a specimen of *striatella*—not the type—from the Grote collection. The two refer to the same species.

P. formosa Grt.*

1865. Grt., Proc. Ent. Soc. Phil., iv, 323, *Leptina*.

1875. Morr., Ann. Lye. Nat. Hist. N. Y., xi, 98, *Plusia*.

HABITAT.—Maine; Massachusetts in July; New York; New Jersey.

I have not seen the type. Mr. Grote mentions incidentally in the Can. Ent., **xxi**, 124, that he returned it to Mr. Treat after description. What became of it afterward, I can not say. The species is well known, however, though rare, and can not be mistaken.

P. thyatiroides Gn.*

1852. Gn., Spec. Gen., Noct., ii, 337, pl. 11, f. 8, *Plusia*.

1857. Wlk., C. B. Mus., Het., **xii**, 905, *Plusia*.

HABITAT.—New York, August and September; Canada; Northern, Central, and Middle States.

The type is in the British Museum.

P. mappa G. & R.*

1868. G. & R., Trans. Am. Ent. Soc., ii, 204, *Plusia*.

1869. Bethune, Can. Ent., i, 87, *Plusia*.

HABITAT.—Canada in July and August; Northern States; Mount Washington.

I have not seen the type, nor do I know where it is.

P. bimaculata Steph.*

1832. Steph., Ill. Brit. Ent., Haust., **iii**, 104, *Plusia*.

1857. Wlk., C. B. Mus., Het., **xii**, 905, *Plusia*.

u-brevis Gn.

1852. Gn., Spec. Gen., Noct., ii, 341, *Plusia*.

1857. Wlk., C. B. Mus., Het., **xii**, 905, † pr. syn.

1874. Grt., Bull. Buff. Soc. Nat. Sci., **ii**, 30, † pr. syn.

1874. Grt., Can. Ent., **vi**, 72, pr. syn.

protea Cram.

1782. Cram., Pap. Ex., iv, 244, pl. 400, f. M, *Noctua*.

1857. Wlk., C. B. Mus., Het., **xii**, 905, † pr. syn.

HABITAT.—Canada in July and August, to Middle States; New York; New Jersey.

The type of Guenée's species is in the British Museum. The reference to Cramer's species may or may not be correct. I have not examined the matter myself, and simply give the Walker citation. Of course Cramer's name would have priority did it apply to our species.

P. biloba Steph.*

1832. Steph., Ill. Brit. Ent., Haust., **iii**, 104, *Plusia*.

1852. Gn., Spec. Gen., Noct., ii, 341, pl. 11, f. 10, *Plusia*.

1857. Wlk., C. B. Mus., Het., **xii**, 906, *Plusia*.

1882. French, Papilio, **ii**, 113, life history.

HABITAT.—Massachusetts to Florida, west through the Mississippi States; Texas; Colorado in September; California in April; New York in June and July.

P. verruca Fabr.*

1794. Fabr., Ent. Syst., III, 2, 81, *Noctua*.
 1811. Oliv., Encyc. Meth., VIII, 315, *Noctua*.
 1852. Gn., Spec. Gen., Noct., II, 342, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 906, *Plusia*.
omega Hbn.
 1820. Hbn., Zuträge, 29, f. 373, 374, *Argyrogramma*.
 1852. Gn., Spec. Gen., Noct., II, 342, pr. syn.
 1857. Wlk., C. B. Mus., Het., XII, 906, pr. syn.
oo. Cram.
 1782. Cram., Pap. Exot., IV, 45, pl. 311, f. *E*, not *F*, *Noctua*.
 1852. Gn., Spec. Gen., Noct., II, 342, pr. syn.
 1856. Wlk., C. B. Mus., Het., XII, 906, † pr. syn.
omicron Hbn.
 1816. Hbn., Verzeichniss, 251, *Autographa*.
 1857. Wlk., C. B. Mus., Het., XII, 906, pr. syn.
questionis Tr.
 1835. Tr., Schmett. Eur., Supplt., 132, *Plusia*.
 1840. Bdv., Gen. et Ind. Meth., 158, *Plusia*.
 1852. Gn., Spec. Gen., Noct., II, 342, pr. syn.
 1857. Wlk., C. B. Mus., Het., XII, 906, pr. syn.

HABITAT.—New York to Florida, Texas, Central and South America; Massachusetts in August; New Jersey in May; Texas in November; Kansas.

The synonymy above is that given by Guenée and after him by Walker. The latter questions *oo* Cramer, as the same, but Guenée seems to consider that Cramer had two species under that name, and cites figure *E* only to this form. Walker makes this the *omicron* of Hübner, nec Linnæus.

P. rogationis Gn.*

1852. Gn., Spec. Gen., Noct., II, 344, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 906, *Plusia*.
hamifera Wlk.
 1857. Wlk., C. B. Mus., Het., XII, 917, *Plusia*.
dyaus Grt.
 1875. Grt., Can. Ent., VII, 202, *Plusia*.

HABITAT.—New York to Texas; Colorado; South America.

In the British Museum are types of *hamifera* and *dyaus*, and these are unquestionably alike. There are also specimens of *dyaus* under *pre-cationis* Wlk.; but there are no specimens of *rogationis* under the label. In the Berliner Museum, however, is a series of South American specimens marked *rogationis* Gn., and among them is a specimen from Boll, Texas, exactly like *dyaus*. Guenée mentions his species as from divers collections, not rare, and gives "Am. Sept." as one of the localities. His comparative description applies perfectly, and though I have not seen absolute types, I make no doubt the Berlin specimens are correctly named and that *dyaus* Grt., is the same species. *Hamifera* is recorded from Brazil and Venezuela, covering thus the localities given by Guenée.

P. culta Lint.

1885. Lintner, 2nd Rept. Ins. New York, 94, *Plusia*.

1891. Smith, List Lepidoptera, 52, = *laticlavia*.

HABITAT.—New York.

The type is in Dr. Lintner's collection.

I was in error in referring this species to *laticlavia* Morrison in the Check list.

P. precatlonis Gn.*

1852. Gn., Spec. Gen., Noct., II, 344, *Plusia*.

1857. Wlk., C. B. Mus., Het., XII, 907, *Plusia*.

1869. Pack., Guide to Study of Insects, 312, larva.

1882. Coquillett, Can. Ent., XIV, 60, larva.

HABITAT.—Canada; United States east of the Rocky Mountains.
May to October.

The type is in the British Museum, where there are three species mixed under this name. The description of the larva cited by Mr. Edwards in his catalogue of early stages applies to *simplex*.

P. egena Gn.

1852. Gn., Spec. Gen., Noct., II, 328, *Plusia*.

1883. Grt., Can. Ent., XV, 26, *Plusia*.

HABITAT.—Indian River, Florida.

The species is described from Brazil. I have not seen the type.

P. labrosa Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 207, *Plusia*.

HABITAT.—California in August.

The type is in the British Museum.

P. flagellum Wlk.

1857. Wlk., C. B. Mus., Het., XII, 909, *Plusia*.

monodon, Grt.

1875. Grt., Can. Ent., VII, 202, *Plusia*.

HABITAT.—Hudson Bay Territory, Cape Breton; "North America."

The types are in the British Museum and refer to the same species.

P. pseudogamma Grt.

1875. Grt., Can. Ent., VII, 203, *Plusia*.

HABITAT.—Cape Breton.

The type is in the British Museum.

P. gamma Linn.

1761. Linn., Fauna Suec., 1171, *Noctua*.

1767. Linn., Syst. Nat., ed. XII, 2, 843, *Noctua*.

1781. Fabr., Spec. Insect., II, 227, *Noctua*.

1787. Fabr., Mant. Ins., II, 162, *Noctua*.

1793. Fabr., Ent. Syst., III, 2, 79, *Noctua*.

1811. Oliv., Encycl. Meth., VIII, 313, *Noctua*.

1816. Hbn., Verzeichniss, 251, *Autographa*.
 1823. Tr., Schmett. Eur., v, 185, *Plusia*.
 1837. Kirby, Fn. Bor. Amer., iv, 307, *Plusia*.
 1852. Gn., Spec. Gen., Noct., II, 348, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 899, *Plusia*.
 1874. Strk., Lep. Rhop. et Het., 94, *Plusia*.
 1874. Grt., Can. Ent., VI, 16, *Plusia*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 164, *Plusia*.
 1881. Beth., Can. Ent., XIII, 162, *Plusia*.

HABITAT.—Hudson's Bay Territory; Canada; California.

This species is omitted from Mr. Grote's list of 1891, and from my own as well. I believed that the northern type was *pseudogamma* and the western, *californica*. I am not certain now that such is not the case; but as I have not had an opportunity of comparing types I give the species a place pending further study.

P. ou Gn.*

1852. Gn., Spec. Gen., Noct., II, 348, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 907, *Plusia*.
 1874. Morr., Proc. Bost. Soc. N. H., XVII, 219, *Plusia*.
 var. *californica* Spey.*
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 164, *Plusia gamma* var.
 1886. Hy. Edw., Ento. Amer., II, 170, *Plusia*.
 var. *russea* Hy. Edw.
 1886. Hy. Edw., Ento. Amer., II, 170, var. *prec.*

HABITAT.—New York; Missouri; Nebraska; Florida; Texas March, May, and November; California, March, April, and August; Colorado in September; Oregon, April, May, and June.

Guenée's type is in the British Museum and the specimens from the Grote collection are like it. *Californica* Speyer is a slight variety of *ou*, and not of *gamma*, as Speyer thought. The California localities for *gamma* are probably based on this species. Dr. Strecker states very positively that his California examples are *gamma*. Mr. Edwards's variety is scarcely worthy a name.

P. fraterna Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 161, *Plusia*.
 1875. Morr., Proc. Bost. Soc. N. H., 1875, 219, = *P. ou*.

HABITAT.—Texas.

The type is in the British Museum. As already stated, Mr. Grote had correctly identified *ou*, and Mr. Morrison's reference of *fratella* is, therefore, incorrect.

P. pedalis Grt.

1875. Grt., Can. Ent., VII, 204, *Plusia*.

HABITAT.—Kansas.

The type is in the British Museum.

P. brassicæ Riley.*

1870. Riley, 2d Rept. Ins. Mo., 110, f. 81, *Plusia*.
 1871. Beth., Rept. Ent. Soc. Ont., 1871, 51, f. 93, *Plusia*.
 1871. Pack., in Hayden's 9th Rept. Geol. Surv., 752, f. a, b, c.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 147, = *ni*.
 1875. Speyer, Stett. Ent. Zeit., xxxvi, 165, 350, *Plusia*.
 1880. Riley, Amer. Ent., III, 200, *Plusia*.
 1881. Riley, Index and Suppl., to Mo. Repts., 77, sp. dist.
 1881. Riley, Papilio, I, 106, *Plusia*.
 1881. Grt., Papilio, I, 127, = *ni*.
 1881. Butler, Papilio, I, 170, = *u-aureum*.
 1882. Riley, Papilio, II, 43, sp. dist.
 1883. Riley, Rept. U. S. Dept. Agl., 1883, 119, pl. I et XI, life hist.
 1886. Grt., Can. Ent., XVIII, 232, = *ni*.
 ni † Grt.
 1873. Grt., Bull. Buff. Soc., Nat. Sci., I, 147, *Plusia*.
 1880. Lintner, in Colvin's 7th Rept. Surv. Adir., 399, *Plusia*.
 echinocystis Behr.
 1874. Behr, in Strk. Lepidopt., 94, *Plusia*.

HABITAT.—United States generally; Canada. Throughout the season.

Dr. Riley's types are in the National Museum. I have not compared the European and American species and give the above as the present status of the literature. Mr. Butler's reference to *u-aureum* Gn., is wild. In the Berliner Museum there is a specimen labeled *echinocystis* Behr, received from Boll, Texas. I am inclined to believe the labeling authentic, and the very brief description is not contradictory in any way. It has been referred, doubtfully, to *pasiphaa*; but this does not agree with what little is said. The economic bibliography is large.

P. oxygramma Geyer.*

1830. Geyer, Zuträge, f. 769, 770, *Autographa*.
 1852. Gn., Spec. Gen., Noct., II, 353, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 908, *Plusia*.

HABITAT.—Missouri; Georgia; Southern States; Texas.

P. scapularis Hy. Edw.

1882. Hy. Edw., Papilio, II, 127, *Plusia*.

HABITAT.—Washington.

Types are in the Edwards and Neumögen collections.

P. lenzi French.

1889. French, Can. Ent., XXI, 161, *Plusia*.

HABITAT.—Siskiyou, California.

I have not seen this species. I believe Prof. French has the type.

The species is nominally credited to Dr. Behr, MSS.; but the description is by French, and he must be credited with the species, since he, not Dr. Behr, characterized it.

P. u-aureum Gn.*

1852. Gn. Spec. Gen., Noct., II, 354, *Plusia*.
 1860. Moeschl., Wien. Ent. Monatschr., IV, 371, *Plusia*.
 1881. Butler, Papilio, I, 170, *Plusia*.
interrogationis var. *grænlandica* Stgr.
 1857. Stgr., Stett. Ent. Zeit., XXVIII, 306, *Plusia*.
 1860. Moeschl., Wien. Ent. Monatschr., IV, 371, pr. syn.

HABITAT.—Labrador; Greenland; Canada in September; Adirondack Mountains in July.

I have seen no types. The species is credited to "Boisduval in Mus.," but was first described by Guenée. The types are probably with M. Oberthür.

P. mortuorum Gn.*

1852. Gn., Spec. Gen., Noct., II, 353, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 910, *Plusia*.

HABITAT.—Canada; Northern and Eastern States; New York and New Jersey, July and August.

The type is in the British Museum.

P. octo-scripta Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 72, *Plusia*.
 1874. Grt., Can. Ent., VI, 72 (*8-signata*).

HABITAT.—Anticosti; Canada in September; Maine; Vermont; Massachusetts in September; New York; Wisconsin.

I have seen no type. I can not find that Sanborn ever described this species, and therefore credit it to Mr. Grote, who did so.

P. falcigera Kirby.

1837. Kirby, Fn. Bor. Amer., IV, 308, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 908, *Plusia*.
 1881. Both., Can. Ent., XIII, 463, *Plusia*.
rectangula Kirby.
 1837. Kirby, Fn. Bor. Amer., IV, 306, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 908, † pr. syn.
 1881. Beth., Can. Ent., XII, 162, *Plusia*.

HABITAT.—Hudson Bay Territory; Nova Scotia; Canada.

The above synonymy is after Walker, and may or may not be correct. Dr. Bethune writes *falcifera* while Walker has it *falcigera*. I have not seen the original description and am not sure which is correct. Mr. Grote, however, also writes *falcigera*, and he has, perhaps, compared the original work. The specimens in the British Museum labeled *falcigera* by Walker are *vaccinii* Hy. Edw., and do not accord well with the description copied by Dr. Bethune. It is, however, quite likely that the species belongs here.

P. vaccinii Hy. Edw.*

1886. Hy. Edw., Ento. Amer., II, 170, *Plusia*.

HABITAT.—Mt. Washington, N. H.; New York, Adirondack Mountains; Nova Scotia.

The type is with Dr. Thaxter, who pointed out the species to me in the National Museum, where it stood in the Meske collection as *octoscripta*. It much resembles that species. As already stated, this is the *falcigera* of Walker, and possibly that of Kirby as well; but there is sufficient doubt in the matter to prevent their union here.

P. selecta* Wlk.

1857. Wlk., C. B. Mus., Het., XII, 912, *Plusia*.
viridisignata Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 73 (*viridisigma*).

1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 5, *Plusia*.

1875. Grt., Can. Ent., VII, 205, *Plusia*.

HABITAT.—Hudson Bay Territory; Canada in August; Adirondack Mountains, New York; Denver, Colorado.

The types are in the British Museum, and refer to the same species.

P. angulidens* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 111, *Plusia*.

HABITAT.—South Park, Colorado.

Types are in the National Museum, the Neumægen collection, and in the Rutgers College collection.

***P. celsa* Hy. Edw.**

1881. Hy. Edw., Papilio, I, 101, *Plusia*.

HABITAT.—Oregon.

The type is in the Neumægen collection.

P. epigæa* Grt.

1874. Grt., Proc. Ac. Nat. Sci., Phil., 1874, 208, *Plusia*.

HABITAT.—New York in July; Massachusetts in July; Colorado.

The type is in the British Museum.

***P. surena* Grt.**

1882. Grt., Bull. Geol. Surv., VI, 585, *Plusia*.

HABITAT.—Orono, Maine.

The type is in Mrs. Fernald's collection.

P. basigera* Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 836, *Plusia*.
laticlavia Morr.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 98, *Plusia*.

HABITAT.—New York; New Jersey in October; Florida.

Walker's type is in the British Museum, from "North America." Mr. Morrison's type is in the Tepper collection; the two are identical. I have unfortunately referred Dr. Lintner's *culta* to *laticlavia*, with which it has little in common.

P. ampla Wlk.*

1857. Wlk., C. B. Mus., Het., XII, 910, *Plusia*.

HABITAT.—Hudson Bay Territory; Canada; Northern and Eastern States, July and August.

The type is in the British Museum.

P. simplex Gn.*

1852. Gn., Spec. Gen., Noct., II, 346, *Plusia*.

1857. Wlk., C. B. Mus., Het., XII, 907, *Plusia*.

1877. Grt., Bull. Geol. Surv., III, 119, *Plusia*.

1881. Coquillett, Can. Ent., XIII, 21—larva sub nom. *precationis*.

1882. Coquillett, Can. Ent., XIV, 16, larva.

HABITAT.—Hudson Bay Territory; Canada; United States east of the Rocky Mountains, throughout the season; Colorado, 12,000 feet; New Mexico.

The type is in the British Museum.

P. pasiphæia Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 146, pl. IV, f. 1, *Plusia*.

HABITAT.—California in October.

The type is in the British Museum. Mr. Grote has cited, with a query, *P. echinocystis* Behr, to this species. The description of Dr. Behr's species tells nothing; but I have given under *brassica* my reasons for citing it there.

P. diasema Bdv.

1829. Bdv., Eur. Lep., Ind. Meth., 93, *Plusia*.

1852. Gn., Spec. Gen., Noct., II, 355, *Plusia*.

1857. Wlk., C. B. Mus., Het., XII, 902, *Plusia*.

1857. Staud., Stett. Ent. Zeit., 1857, 305, *Plusia*.

HABITAT.—Labrador; Lapland; Colorado.

The type is probably with M. Oberthür, at Rennes. Mr. Grote has always written *diasema* Dalman; but I have not been able to ascertain why. I still followed Mr. Grote in my list, but make the change here because I can not trace the species otherwise.

P. parilis Hbn.

1800. Hbn., Schmett. Eur., Noct., III, 422, *Noctua*.

1816. Hbn., Verzeichniss, 251, *Autographa*.

1829. Bdv., Ind. Meth., 159, *Plusia*.

1852. Gn., Spec. Gen., Noct., II, 355, *Plusia*.

1857. Wlk., C. B. Mus., Het., XII, 903, *Plusia*.

1860. Moeschl., Wien. Ent. Monatschr., IV, 371, *Plusia*.
quadriplaga Wlk.

1857. Wlk., C. B. Mus., Het., XII, 911, *Plusia*.

HABITAT.—Fraw Island, Arctic North America; Labrador; Lapland.

Walker's type is in the British Museum, and is the *parilis* of the Grote, Möschler, and other collections. Walker cites Cramer's figure of *Phalæna iota* (Ex. II, 106, pl. 165, fig. C.) to his species, suggesting that

it did not represent the Linnæan species. *Iota*, by the bye, is recorded as American by Kirby; but probably erroneously. So also *mya* Hbn. is made Canadian by Walker. It is a matter of some interest perhaps to ascertain what these authors had before them; but the names need not be repeated here to cumber the list.

***P. sackeni* Grt.**

1877. Grt., Can. Ent., ix, 135, *Plusia*.

1878. Grt., Bull. Geol. Surv., III, 801, *Plusia*.

HABITAT.—Colorado.

The type is in the British Museum.

P. snowi* Hy. Edw.

1884. Hy. Edw., Papilio, iv, 44, *Plusia*.

HABITAT.—New Mexico; Colorado, South Park.

The type is in Prof. Snow's collection.

***P. accurata* Hy. Edw.**

1882. Hy. Edw., Papilio, II, 127, *Plusia*.

HABITAT.—Washington.

Mr. Neumœgen has the type. It is probably not a *Plusia* at all.

***P. alterna* Strk.**

1885. Strk., Proc. Ac. Nat. Sci. Phil., xxxvii, 178, *Plusia*.

HABITAT.—Colorado.

The type is in the Strecker collection.

***P. corrusca* Strk.**

1885. Strk., Proc. Ac. Nat. Sci. Phil., xxxvii, 178, *Plusia*.

HABITAT.—Colorado.

The type is in the Strecker collection. I do not know this or the preceding species, and the proper placing it is impossible from the description.

***P. omicron* Linn.**

1823. Afzelius, Life of Linnæus, *Phalæna*.

1816. Hbn., Verzeichniss, 251, *Autographa*.

1826. Afzelius, Life of Linnæus, Berlin (trans.), 137, *Phalæna*.

1857. Wlk., C. B. Mus., Het., xii, 906, † = *verruca*.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 208, † = *simplex*.

HABITAT.—North America († New York.)

It is perhaps questionable whether this species can ever be identified with certainty. This, however, is a question for a future monographer of the genus and not for the catalogue maker.

***P. indigna* Wlk.**

1857. Wlk., C. B. Mus., Het., xii, 909, *Plusia*.

HABITAT.—"Georgia."

The type is in the British Museum. It is a small species, not in the

Grote collection, and which I had never before seen. It has a peculiarly elongate, narrow, silver-margined spot, extending to the t. p. line at the sinus. It seems really more southern in type. The specimen is without locality, bought in the Milne collection, and is quite as likely to be Australian as American.

Genus **CALOPLUSIA** Smith.

1884. Smith, Bull. Bkln. Ent. Soc., VII. 63.

C. alticola Wlk.*

1857. Wlk., C. B. Mus., Het., XII, 912, *Plusia*.

1874. Pack., Rept. Geol. Surv., 1874, 554, = *hochenwarthi*.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 99, = *hochenwarthi*.
ignea Grt.

1863. Grt., Proc. Ent. Soc. Phil., II, 274, *Plusia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 31, pr. syn.

1874. Pack., Rept. Geol. Surv., 1874, 554, pr. syn.

1875. Morr., Ann. Lyc. Nat. Hist., N. Y., XI, 99, pr. syn.

HABITAT.—Rocky Mountains; Pike's Peak; Colorado.

The type of *alticola* is probably in the British Museum. I have no type mark to the name in my notes, and cannot now remember whether the specimens seen were not from the Grote collection. The type of *ignea* should be in the collection of the American Entomological Society; but I have not been able to find it there.

C. hochenwarthi Hochenw.*

1785. Hochenw., Act. Soc. Berol., VI, 337, pl. 7, f. 2, *Phalæna*.

1786. Esp., Eur. Schmett., IV, pl. 179, f. 3, *Noctua*.

1811. Oliv., Enc. Meth., VIII, 314, = *divergens*.

1852. Gn., Spec. Gen., Noct., II, 356, = *divergens*.

1857. Wlk., C. B. Mus., Het., XII, 904, = *divergens*.

1860. Moeschl., Wien. Ent. Monatschr., IV, 370, *Plusia*.

1874. Pack., Rept. Geol. Surv., 1874, 545, 554, *Plusia*.

1875. Morr., Ann. Lyc. Nat. Hist. N. Y., XI, 99, *Plusia*.
divergens Fabr.

1787. Fabr., Mant. Ins., II, 162, *Noctua*.

1793. Fabr., Ent. Syst., III, 2, 80, *Noctua*.

1811. Oliv., Enc. Meth., VIII, 314, *Noctua*.

1816. Hbn., Verzeichniss, 250, *Syngrapha*.

1823. Treit., Schmett. Eur., v, 194, *Plusia*.

1852. Gn., Spec. Gen., Noct., II, 355, *Plusia*.

1857. Wlk., C. B. Mus., Het., XII, 904, *Plusia*.

1871. Staud., Cat. Lep. Eur., 127, pr. syn.

1874. Pack., Rept. Geol. Surv., 1874, 554, pr. syn.

HABITAT.—Labrador; White Mountains; Colorado, South Park, Hall Valley, in August.

I have not given all the European bibliography. It is possible that Hübner's term *Syngrapha* may supersede *Caloplusia*; but I can not now compare the Verzeichniss to ascertain the type of the genus. It differs from *Plusia* in the narrow, ovate eyes, the spinose tibiæ, and anarti-form habitus.

C. devergens Hbn.*

1800. Hbn., Schmett. Eur., Noct., 500, 501, *Nootua*.
 1816. Hbn., Verzeichniss, 250, *Syngrapha*.
 1823. Treit., Schmett. Eur., v, 197, *Plusia*.
 1852. Gn., Spec. Gen., Noct., II, 356, *Plusia*.
 1857. Wlk., C. B. Mus., Het., XII, 903, *Plusia*.

HABITAT.—Colorado; Labrador.

Genus **LEPIPOLYS** Gn.

1852. Gn., Spec. Gen., Noct., II, 173.

L. perscripta Gn.

1852. Gn., Spec. Gen., Noct., II, 174, pl. vii f. 10, *Lepipolys*.
 1857. Wlk., C. B. Mus., Het., XI, 677, *Lepipolys*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 147, *Lepipolys*.

HABITAT.—Massachusetts; Florida; Texas; Colorado; California, in May.

The type is in the British Museum. The species is well marked and easily recognizable.

Genus **CALPE** Tr.

1825. Tr., Schmett. Eur., v, 2, 168.

C. canadensis Beth.*

1865. Bethune, Proc. Ent. Soc. Phil., IV, 213, *Calpe*.
 1868. Bethune, Can. Ent., I, 71, *Calpe*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 166, 350, *Calpe*.
 1878. Thaxt., Psyche, II, 123, larva.
 1880. Coquillett, Can. Ent., XII, 44, larva.
purpurascens Wlk.
 1865. Wlk., C. B. Mus., Het., XXXIII, 842, *Plusiodonta*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 87, pr. syn.
 1868. Bethune, Can. Ent., I, 71, pr. syn.
sobria Wlk.
 1865. Wlk., C. B. Mus., Het., XXXIII, 846, *Orassia*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 87, per syn.

HABITAT.—Canada; New York, in August and September; New Jersey; Massachusetts in July; New Hampshire in September.

Walker's types are in the British Museum. Dr. Bethune's type is probably in his own collection.

Genus **GONODONTA** Hbn.

1816. Hübner, Verzeichniss, 263.

G. unica Neum.

1891. Neum., Can. Ent., XXIII, 125, *Gonodonta*.

HABITAT.—Indian River, Florida.

Types are in the Neumögen and Palm collections.

Genus **PLUSIODONTA** Gn.

1852. Gn., Spec. Gen., Noct., II, 359.

P. compressipalpis Gn.*1852. Gn., Spec. Gen., Noct., II, 359, pl. 12, f. 2, *Plusiodonta*.1857. Wlk., C. B. Mus., Het., XII, 938, *Plusiodonta*.
insignis Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 842, † *Plusiodonta*.

HABITAT.—Canada to Georgia, to Texas; east of the Rocky Mountains, June, July, September.

The types are in the British Museum. It is one of the mysteries how Walker, with Guenée's type and figure before him, could rename so prominent a species.

Genus **HYPSOROPHA** Hbn.

1816. Hbn., Verzeichniss, 249.

H. monilis Fabr.*1781. Fabr., Spec. Ins., II, 219, *Noctua*.1787. Fabr., Mant. Ins., II, 147, *Noctua*.1793. Fabr., Ent. Syst., III, 2, 46, *Noctua*.1811. Oliv., Encycl. Meth.; VIII, 281, *Noctua*.1816. Hbn., Verzeichniss, 249, *Hypsoropha*.1818. Hbn., Zutraege, f. 23 and 24, *Hypsoropha*.1857. Wlk., C. B. Mus., Het., XIII, 994, *Hypsoropha*.1880. Grt., Can. Ent., XII, 85, *Hypsoropha*.

HABITAT.—Southern States; west to Kansas. Missouri in June.

H. hormos Hbn.1818. Hbn., Zutraege, 10, ff. 27, 28, *Hypsoropha*.1816. Hbn., Verzeichniss, 249, *Hypsoropha horma*.1852. Gn., Spec. Gen., Noct., II, 403, *Monogona*.1857. Wlk., C. B. Mus., Het., XIII, 995, *Tiaupa*.1880. Grt., Can. Ent. XII, 85, *Hypsoropha*.

HABITAT.—New York to Texas; Central States. District of Columbia in August.

Genus **HEMICERAS** Gn.

1852. Gn., Spec. Gen., Noct., II, 379.

H. cadmia Gn.1852. Gn., Spec. Gen., Noct., II, 383, pl. 13 f. 2, *Hemiceras*.1857. Wlk., C. B. Mus., Het., XIII, 970, *Hemiceras*.*obliquilinea* Wlk.1862. Wlk., C. B. Mus., Het., XXVI, 1695, *Comidava*.

HABITAT.—Middle and Southern States.

Walker's type is in the British Museum, while that of M. Guenée is at Rennes with M. Oberthür. Walker's species was described as a geometrid, from Venezuela.

Genus **CIRRHOPHANUS** Grt.

1872. Grt., Can. Ent., iv, 187.

C. triangulifer Grt.*1872. Grt., Can. Ent., iv, 187, *Cirrhophanus*.1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 421, fig., *Cirrhophanus*.1882. Grt., Ill. Essay, 60, pl. 3 f. 26, *Chariclea*.1882. Grt., Can. Ent., xiv, 183, *Cirrhophanus*.1883. Riley, Amer. Naturalist, xvii, 788, fig., *Cirrhophanus*.1883. Grt., Can. Ent., xv, 76, *Cirrhophanus*.*pretiosa* Morr.1875. Morr., Proc. Bost. Soc. N. H., xviii, 122, *Chariclea*.

1875. Grt., Check List Noctuidæ, 12, pr. syn.

1882. Grt., Ill. Essay, 60, pr. syn.

HABITAT.—Middle and Central States to Kansas.

The original type specimen is in the National Museum from the Riley collection. Mr. Morrison's type I have not seen.

C. duplicatus Smith.*1891. Smith, Trans. Am. Ent. Soc., xviii, 112, *Cirrhophanus*.**HABITAT.**—Platte Cañon, Colorado, 6,500 feet.

The type is in the National Museum.

Genus **BASILODES** Gn.

1852. Gn., Spec. Gen., Noct., ii, 358.

B. pepita Gn.*1852. Gn., Spec. Gen., Noct., ii, 358, pl. 12 f. 1, *Basilodes*.1857. Wlk., C. B. Mus., Het., xii, 936, *Basilodes*.1883. Grt., Can. Ent., xv, 73, *Basilodes*.**HABITAT.**—Virginia to Florida, to Colorado.

The type is with M. Oberthür at Rennes.

B. chrysopsis Grt.*1881. Grt., Papilio, i, 154, *Basilodes*.**HABITAT.**—Arizona; Colorado; New Mexico.

The type is with Mr. Neumögen.

B. territans Hy. Edw.*1884. Hy. Edw., Papilio, iv, 45, *Basilodes*.**HABITAT.**—Arizona.

The type is with Mr. Neumögen.

B. howardi Hy. Edw.*1877. Hy. Edw., Pacific Coast, Lep., 25, p. 1, *Plusia*.1884. Hy. Edw., Papilio, iv, 45, *Basilodes*.**HABITAT.**—Arizona.

The type is in the Edwards collection.

B. mirabilis Neum.

1884. Neum., Papilio, iv, 94, *Basilodes*.

HABITAT.—Southwestern Arizona.

The type is in the Neumøgen collection.

Genus **STIRIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 73.

S. rugifrons Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 73, *Stiria*.

1882. Grt., Can. Ent., XIV, 76, *Stiria*.

1883. Grt. Can. Ent., xv, 74, *Stiria*.

HABITAT.—Kansas; Colorado, Denver in June.

The type is in the British Museum.

S. sulphurea Neum.

1882. Neum., Papilio, II, 135, *Stiria*.

HABITAT.—Arizona.

The type is in Mr. Neumøgen's collection.

S. nanata Neum.

1884. Neum., Papilio, iv, 95, *Stiria*.

HABITAT.—New Mexico.

The type is with Mr. Neumøgen.

Genus **STIBADIUM** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 74.

S. spumosum Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 74, *Stibadium*.

1882. Grt., Can. Ent., XIV, 76, *Stibadium*.

1883. Grt., Can. Ent., xv, 74, *Stibadium*.

HABITAT.—New York to Kansas; Illinois; Colorado in August; Nebraska in August.

The type is in the British Museum.

S. aureolum Hy. Edw.*

1882. Hy. Edw., Papilio, II, 126, *Stibadium*.

HABITAT.—Arizona.

The types are in the Neumøgen and Edwards collections.

S. curiosum Neum.

1883. Neum., Papilio, III, 141, *Stibadium*.

HABITAT.—Arizona.

Types are in the Neumøgen collection.

S. navium Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 10, *Telesilla navia*.1883. Grt., Can. Ent., XV, 131, *Telesilla*.1891. Smith, Trans. Am. Ent. Soc., XVIII, 111, *Stibadium*.**HABITAT.**—Texas in May.

The type is in the British Museum, and is like the specimens I have seen so named. The type shows, distinctly enough, all the structural characters of the present genus, and only the superficial habitus of *Telesilla*.

Genus PLAGIOMIMICUS Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 182.

The relation of the three preceding to the present genus can not be considered as settled. In the Bull. Bkln. Ent. Soc., v, 30, I had united them all as *Basilodes*, which is perhaps too radical a procedure. As new species have been and will be added, the relations will become more clear. Some of the species of *Plusia* will find a place here I think, and perhaps some other species elsewhere referred at present.

P. pitychromus Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 182, *Plagiomimicus*.1882. Grt., Can. Ent., XIV, 75, 182, *Plagiomimicus*.1882. Grt., Papilio, II, 183, *Plagiomimicus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 172, *Plagiomimicus*.
media Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 123, *Schinia*.

1880. Grt., Can. Ent., XII, 185, pr. syn.

HABITAT.—New York in August; Middle, Southern, and Central States; Colorado; Nebraska; Texas in August.

Grote's type is in the British Museum. Mr. Morrison's specimen I have not seen.

P. triplagiatus Smith.*1890. Smith, Ento. Amer., VI, 139, *Plagiomimicus*.**HABITAT.**—Las Vegas, New Mexico, 7,000 feet, August.

Types are in the Neumægen collection and in the Rutgers College (Hulst) collection.

P. tepperi Morr.*1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 68, *Schinia*.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 124, *Polenta*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Plagiomimicus*.1882. Grt., Can. Ent., XIV, 75, *Plagiomimicus*.1882. Grt., Papilio, II, 185, *Plagiomimicus*.1883. Grt., Proc. Am. Phil. Soc., XXI, 172, *Plagiomimicus*.
richi Grt.1886. Grt., Can. Ent., XVIII, 99, *Plagiomimicus*.

1891. Smith, List Lepidoptera, 53, pr. syn.

HABITAT.—Texas, in March; Colorado in August.

Mr. Morrison's types are in the Tepper and Neumægen collections; Mr. Grote's is in the British Museum. I am, at least in great part,

responsible for Mr. Grote's synonym, by insisting, correctly enough, that Mr. Morrison's type in the Tepper collection had unarmed fore tibiae as described. Many specimens examined since, prove that this was a defect in the type and not characteristic of the species.

P. expallidus* Grt.

1882. Grt., Papilio, II, 185, *Plagiomimicus*.

HABITAT.—Montana; Colorado, Platte Cañon in August.

Types are in the National Museum and in the Neumægen collection.

***P. viridifera* Grt.**

1882. Grt., Can. Ent., XIV, 217, *Zothea*.

1891. Smith, List Lepidoptera, 53, *Plagiomimicus*.

HABITAT.—Arizona.

The type is in Mr. Neumægen's collection. The species has a curious color resemblance to the species of *Zothea*; but in head and feet structures the reference here is justified.

Genus *FALA* Grt.

1875. Grt. Proc. Ac. Nat. Sci. Phil., 1875, 425.

F. ptycophora* Grt.

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 426, *Fala*.

1882. Grt., Ill. Essay, 64, pl. 3, f. 36, *Fala*.

1883. Grt., Can. Ent., XV, 74, *Fala*.

HABITAT.—California.

The type is in the British Museum. It is a curious mottled species, with heavy body and primaries, in which the costa is depressed and the apices are distinct. A specimen in the National Museum had long puzzled me as to its location, as I could not make it function satisfactorily with Mr. Grote's descriptions.

Genus *ACOPA* Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 273.

A. carina* Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 279, *Acopa*.

1878. Grt., Can. Ent., X, 67, *Acopa*.

1883. Grt., Can. Ent., XV, 77, *Acopa*.

HABITAT.—Texas, in October.

The type is in the British Museum.

***A. perpallida* Grt.**

1878. Grt., Can. Ent., X, 68, *Acopa*.

HABITAT.—Kansas.

The type is in the British Museum.

***A. incana* Hy. Edw.**

1882. Hy. Edw., Papilio, II, 128, *Acopa*.

HABITAT.—Arizona.

The type is in Mr. Neumægen's collection.

A. pacifica Hy. Edw.1884. Hy. Edw., Papilio, iv, 46, *Acopa*.

HABITAT.—Arizona.

The type is said to be in the Neumœgen collection.

Genus *NEUMCÆGENIA* Grt.

1882. Grt., Papilio, ii, 132.

N. poetica Grt.1882. Grt., Papilio, ii, 132, 184, *Neumœgenia*.

HABITAT.—Arizona; Oregon.

The type is in the Neumœgen collection.

Genus *ANTAPLAGA* Grt.

1877. Grt., Can. Ent., ix, 71.

A. dimidiata Grt.*1877. Grt., Can. Ent., ix, 71, *Antaplagæ*.1882. Grt., Can. Ent., xiv, 74, *Antaplagæ*.1882. Smith, Trans. Am. Ent. Soc., x, 217, *Antaplagæ*

HABITAT.—Colorado.

The type is in the British Museum.

With this genus begins that series treated by me ten years ago in vol. x, of the Transactions of the American Entomological Society under the title, "Synopsis of the North American Heliothinae." This was my first monographic paper, and somewhat crude. It has proved itself accurate enough as to facts, but somewhat too radical in some of its conclusions. Larger material has modified my views as to the standing of some species, and I have made some changes of sequence. As a whole, however, I have retained the results of that work, adding largely to the bibliography.

A. sexseriata Grt.1881. Grt., Papilio, i, 176, *Grotella*.1882. Grt., Ill. Essay, 61, pl. 3, f. 29, *Grotella*.1882. Smith, Trans. Am. Ent. Soc., x, 217, *Antaplagæ*.

HABITAT.—Arizona.

The types are in the British Museum and in the Neumœgen collection.

A. biundulata Zell.1872. Zell., Verh. k. k. zool. bot. Ges., 1872, 502, pl. iii, f. 14, *Sedenia biundulalis*.1891. Smith, Trans. Am. Ent. Soc., xviii, 120, *Antaplagæ*.

HABITAT.—Texas.

There are specimens of this species, probably named by Zeller himself, in the Berliner Museum, agreeing with the specimens upon which my note was based. Like it, they came from Boll, Texas, and were placed among the Noctuidæ.

A. composita Hy. Edw.1884. Hy. Edw., *Papilio*, IV, 44, *Eulithosia*.1891. Smith, List Lepidoptera, 53, *Antapлага*.**HABITAT.**—Arizona.

The type is with Mr. Neumøgen.

A. thoracica Hy. Edw.1884. Hy. Edw., *Papilio*, IV, 44, *Eulithosia*.1891. Smith, List Lepidoptera, 53, *Antapлага*.**HABITAT.**—Arizona.

The type is with Mr. Neumøgen. The two last-named species were made types of a new Lithosiid genus by Mr. Edwards, who allowed a certain false habitus to deceive him. The frontal and tibial structure is characteristic of the present genus.

Genus **GROTELLA** Harv.

1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 278.

G. septempunctata Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 278, *Grotella*.1882. Smith, Trans. Am. Ent. Soc., x, 218, *Grotella*.**HABITAT.**—Texas, in August and October; Colorado.

The type is in the British Museum.

G. dis Grt.*1883. Grt., Ann. and Mag. N. H., 1883, 55, *Grotella*.1883. Grt., Trans. Kans. Ac. Sci., VIII, 55, *Grotella*.**HABITAT.**—New Mexico; Arizona.

The types are with Mr. Neumøgen and in the National Museum.

Genus **PIPPONA** Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 9.

P. bimatrix Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 10, *Pippona*.1882. Grt., Can. Ent., XIV, 75, *Pippona*.1882. Smith, Trans. Am. Ent. Soc., x, 216, *Pippona*.**HABITAT.**—Texas, in October.

The type is in the British Museum.

Genus **BESSULA** Grt.1881. Grt., *Papilio*, I, 176.**B. luza** Grt.1881. Grt., *Papilio*, I, 176, *Bessula*.1882. Grt., Can. Ent., XIV, 74, *Bessula*.1882. Smith, Trans. Am. Ent. Soc., x, 218, *Bessula*.**HABITAT.**—New Mexico; Colorado.

The type is in the British Museum. It is an easily recognized form, much like *Pippona* in outline, which I had not before seen.

Genus **OXYCNEMIS** Grt.

1882. Grt., Can. Ent. xiv, 182.

O. advena Grt.1882. Grt., Can. Ent., xiv, 182, *Oxycnemis*.. 1882. Grt., Proc. Am. Phil. Soc., xxi, 165, 175, *Oxycnemis*.**HABITAT.**—Arizona.

The type is in the Neumøgen collection.

Genus **NYCTEROPHÆTA** Smith.

1882. Smith, Bull. Bkln. Ent. Soc., iv, 45.

N. luna Morr.*1875. Morr., Proc. Bost. Soc. N. H., xviii, 122, *Cucullia*.1891. Smith, List Lepidoptera, 53, *Nycterophæta*.*magdalena* Hulst.1882. Hulst, Bull. Bkln. Ent. Soc., iv, 45, *Nycterophæta*.

1891. Smith, List Lepidoptera, 53, pr. syn.

notatella Grt.1882. Grt., Can. Ent., xiv, 75, *Epinyctis*.1883. Grt., Proc. Am. Phil. Soc., xxi, 161, = *magdalena*.**HABITAT.**—Dakota; Wyoming; Black Hills; Montana; Colorado, Denver in June.

Mr. Morrison's type is, I believe, in the Strecker collection. Mr. Hulst's is in the Rutgers College collection, while Mr. Grote described from the Neumøgen collection.

Genus **COPABLEPHARON** Harv.

1878. Harv., Can. Ent., x, 56.

C. absidum Harv.*1874. Harv., Bull. Buff. Soc. Nat. Sci., ii, 275, *Ablepharon*.1876. Harv., Can. Ent., viii, 35, *Arsilonche*.1878. Harv., Can. Ent., x, 56, *Copablepharon*.*grandis* Strk.1875. Strk., Lep. Rhop. et Het., 129, *Aedophron*.

1879. Grt., Can. Ent., xi, 29, pr. syn.

HABITAT.—California in July; Oregon; Colorado; Montana.Dr. Harvey's type is in the Edwards collection. That of *grandis* is probably in the Strecker collection.**C. subflavidens** Grt.*1882. Grt., Can. Ent., xiv, 169, *Copablepharon*.**HABITAT.**—Montana.

The type is with Mr. Neumøgen.

C. longipenne Grt.1882. Grt., Can. Ent. xiv, 169, *Copablepharon*.**HABITAT.**—Montana.

The type is with Mr. Neumøgen.

C. album Harv.*1876. Harv., Can. Ent., VIII, 35, *Arsilonche*.1882. Grt., Can. Ent., XIV, 169, *Copablepharon*.

HABITAT.—Oregon; Colorado; Montana.

The type is in the Edwards collection.

Genus **AEDOPHRON** Led.

1857. Lederer, Noct. Europ., 180.

A. pallens Tepper.1882. Tepper, Trans. Am. Ent. Soc., x, 215, *Aedophron*.

HABITAT.—Southern California.

The type is in the Tepper collection.

Genus **THYREION** Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 121.

T. snowi Grt.1875. Grt., Proc. Ac. Nat. Sci., Phil., 1875, 422, *Aedophron*.1876. Grt., Stett. Ent. Zeit., XXXVII, 137, *Aedophron*.1882. Grt., Ill. Essay, 65, pl. III, f. 37, *Aedophron*.1882. Smith, Trans. Am. Ent. Soc., x, 216, † *Aedophron*.1891. Smith, Trans. Am. Ent. Soc., XVIII, 121, *Thyreion*.

HABITAT.—Kansas.

A specimen († the type) is in the British Museum and agrees generically with the following species:

T. rosea Smith.1891. Smith, Trans. Am. Ent. Soc., XVIII, 121, *Thyreion*.

HABITAT.—South Park, Colorado.

The type is with Mr. Neumögen.

Genus **CHLORIDEA** Westw.

1841. Westw., in Jardine, N. H. Libr., XXXVII, 198.

I use this generic term instead of uniting the two species with *Heliothis*, because, though very closely allied, they can be separated and an overloading of the genus prevented. The only apparent difference is in the wing form, their proportion to the body, and in the pattern of maculation.

C. virescens Fabr.*1781. Fabr., Spec. Ins., II, 217, *Noctua*.1787. Fabr., Mant. Ins., II, 141, *Noctua*.1793. Fabr., Ent. Syst., III, 2, 30, *Noctua*—larva.1811. Oliv., Enc. Meth., VIII, 269, *Noctua*.1841. Westw., in Jardine N. H. Libr., 37, 199, pl. 24, f. 3, *Chloridea*.1852. Gn., Spec. Gen., Noct., II, 175, *Aspila*.1857. Wlk., C. B. Mus., Het., XI, 678, *Chloridea*.1868. H. Sch., Corr. Blatt, Cuba, p. 10, *Chloridea*.

1880. Riley, Am. Ent., III, 7, larva.

1885. Gundlach, Cont. Ent. Cub., 310, *Aspila*.
 1885. Riley, 4th Rept. Ent. Comm., 351, pl. LXII, 4, *Aspila*.
rhexia S. & A.
 1792. S. & A., Ins. Ga., II, 199, pl. 100, *Phalæna*.
 1852. Gn., Spec. Gen., Noct., II, 175, *Aspila*.
 1857. Wlk., C. B. Mus., Het., XI, 696, *Chloridea*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 33, *Chloridea*.
 1882. Smith, Trans. Am. Ent. Soc., x, 220, *Chloridea*.
 1885. Gundlach, Cont. Ent. Cub., 310, pr. syn.
 1885. Riley, 4th Rept. Ent. Comm., 351, pr. syn.
spectanda Strk.
 1875. Strk., Lep. Rhop. et Het., 122, *Heliothis*.
 1879. Grt., Can. Ent., XI, 29, pr. syn.

HABITAT.—Canada in October; Middle, Southern, and Central States west to Colorado; Kansas in August; California in September and October.

Gundlach makes it *rhexia* ♂, *virescens* ♀, while Riley unites the two on the study of long series of material. I have no doubt they are correct, though Guenée points out what seem to him good characters and gives the Fabrician species a South American habitat only.

C. subflexa Gn.

1852. Gn., Spec. Gen., Noct., II, 175, *Aspila*.
 1857. Wlk., C. B. Mus., Het., XI, 678, *Chloridea*.
 1882. Smith, Trans. Am. Ent. Soc., x, 250, *Aspila*.

HABITAT.—North America.

The type is probably with M. Oberthür at Rennes. I am not aware that the species has been identified in American collections and I have seen nothing quite agreeing with the description.

Genus **HELIOCHEILUS** Grt.

1865. Grt., Proc. Ent. Soc. Phil., IV, 328.

H. paradoxus Grt. *

1865. Grt., Proc. Ent. Soc. Phil., IV, 329, pl. III, f. 4 and 6, *Heliocheilus*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 123, *Heliocheilus*.
 1882. Smith, Trans. Am. Ent. Soc., x, 220, *Heliothis*.

HABITAT.—Southern and Central States; Texas, in March; Colorado.

I have not seen the type, which should be in the Philadelphia collection.

H. albidentina Wlk.

1865. Wlk., C. B. Mus., Het., XXXII, 680, *Perigea*.
 1890. Butler, Entomologist, XXIV, 265, = *Anthracia inflata*.

HABITAT.—Florida.

The type is in the British Museum. Compared with *paradoxus*, it is darker throughout, the markings more obvious, s. t. space blackish, with the t. p. line white, denticulate in one specimen only. Anterior tibia with one inner and one outer spine or claw. A curious form, apparently distinct from the South American species. The foregoing is

my note on the species. Since then I have received Mr. Butler's notes in which he makes the species equal *A. inflata* Wallengren, Wien. Ent. Monatschr., 1860, IV, 172, from Honolulu, and suggests that *paradoxus* may be only a paler form. Mr. Butler may be right in his reference, but the species seemed to me distinct, though near allies. Under the circumstances I prefer to hold both species as above, for the present.

Genus **HELIOTHIS** Ochs.

1816. Ochs., Schmett. Eur., IV, 91.

H. armiger Hbn.*

1810. Hbn., Samml. Eur. Schmett., Noct., 370, *Noctua*.
 1816. Ochs., Schmett. Eur., IV, 91, *Heliothis*.
 1852. Gn., Spec. Gen., Noct., II, 181, *Heliothis*.
 1857. Wlk., C. B. Mus., Het., XI, 684, *Heliothis*.
 1868. H. Sch., Corr. Blatt, 1868, Cuba, p. 10, *Heliothis*.
 1875. Speyer, Stett. Ent. Zeit., XXXVI, 158, *Heliothis*.
 1882. Smith, Trans. Am. Ent. Soc., x, 220, *Heliothis*.
 1885. Riley, 4th Rept. Ent. Comm., 355-384, pl. III and IV, *Heliothis*.
umbrosus Grt.
 1863. Grt., Proc. Ent. Soc. Phil., I, 219, *Heliothis*.
 1863. Grt., Proc. Ent. Soc. Phil., I, 347, pr. syn.

HABITAT.—Canada; United States generally, throughout the season. The bibliography given is scant, because in the fourth Report of the U. S. Ent. Comm., there is a very complete list of the literature to 1883. Since that time the species has been again and again treated in economic publications, in most cases without adding anything that is new. The Annual Reports of the United States Department of Agriculture since 1885 should be consulted. For the purposes of this catalogue no more references are needed.

H. phlogophagus G. and R.*

1868. G. & R., Trans. Am. Ent. Soc., I, 180, *Heliothis*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 121, *Heliothis*.
 1881. Coquillett, Papilio I, 56, larva.
 1882. Smith, Trans. Am. Ent. Soc., x, 221, = *dipsaceous*.
 1891. Butler, Entomologist, XXIV, 262, † an sp. dist. *dipsaceous*.
var. interjacens Grt.
 1880. Grt., Bull. Bkln. Ent. Soc., III, 30, *Heliothis*.
 1881. Grt., Papilio, I, 158, pr. syn.
var. luteitinctus Grt.
 1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 426, *Heliothis*.
 1882. Smith, Trans. Am. Ent. Soc., x, 221, = *maritima*.

HABITAT.—Central, Western, and Southern States; Texas in April; Nebraska; Colorado, August to October; New Mexico; British Columbia; Utah; California, in June.

Mr. Grote's types are in the British Museum, where a good series of specimens enabled me to make careful comparisons with the European *dipsaceous* and its varieties. Quite unexpectedly I found that the American form, though a "representative" one, was quite distinct from the European, and that Mr. Grote's names must be restored.

H. scutosus Fabr.

1787. Fabr., Mant. Insect., II, 142, *Noctua*.
 1793. Fabr., Ent. Syst., III, 2, 23, *Noctua*.
 1811. Oliv., Enc. Meth., VIII, 271, *Noctua*.
 1825. Treits., Schmett. Eur., v, 224, *Heliothis*.
 1852. Gn., Spec. Gen., Noct., II, 182, *Heliothis*.
 1857. Wlk., C. B. Mus., Het., XI, 681, *Heliothis*.
 1882. Smith, Trans. Am. Ent. Soc., x, 222, *Heliothis*.
nuchalis Grt.
 1878. Grt., Can. Ent., x, 68, *Heliothis*.
 1878. Grt., Can. Ent., x, 232, *Heliothis*.
 1882. Smith, Trans. Am. Ent. Soc., x, 222, pr. syn.

HABITAT.—Kansas; Colorado; Montana, in May.

Mr. Grote's type is in the British Museum. After careful comparison I have no doubt of its identity with the European species.

H. suavis Hy. Edw. *

1884. Hy. Edw., Papilio, IV, 45, *Heliothis*.

HABITAT.—New Mexico; Colorado, South Park.

The type is with Prof. Snow.

Genus **DERRIMA** Wlk.

1857. Wlk., C. B. Mus., Het., XII, 770.

D. henrietta Grt. *

1864. Grt., Proc. Ent. Soc. Phil., III, 3, pl. II, f. 1, *Philomma*.
 1868. Grt., Trans. Am. Ent. Soc., II, 119, *Derrima*.
 1882. Smith, Trans. Am. Ent. Soc., x, 236, *Derrima*.
 1883. Grt., Proc. Am. Phil. Soc., XXI, 165, = *stellata*.
ab. stellata Wlk.
 1857. Wlk., C. B. Mus., Het., XII, 770, *Derrima*.
 1868. Grt., Trans. Am. Ent. Soc., II, 119, *Derrima*.
 1882. Smith, Trans. Am. Ent. Soc., x, 236, f pr. syn.

HABITAT.—Massachusetts; New York southward; west to the Mississippi States.

Mr. Grote's type I have not seen; but there can be no question as to his species. Specimens of it labeled by Mr. Grote are in the British Museum, where also Walker's type is. The latter is only a somewhat suffused aberration of the normal form and should be cited as such. The white lunules between disk and outer band of primaries are more marked than usual and the secondaries have a rosy flush, else there is no difference that is apparent to me.

Genus **CHAMACLEA** Grt.

1883. Grt., Can. Ent., xv, 76.

C. pernana Grt.

1881. Grt., Papilio, I, 155, *Chariclea*.
 1882. Grt., Can. Ent., XIV, 183, *Chariclea*.
 1882. Grt., Ill. Essay, 60, pl. 3, f. 27, *Chariclea*.

1882. Smith, Trans. Am. Ent. Soc. x, 222, not a *Charioleca*.

1883. Grt., Can. Ent., xv, 76, *Chamaclea*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 172, *Chamaclea*.

HABITAT.—Arizona.

The types are in the Neumægen collection.

Genus ALARIA Westw.

1841. Westw., in Jardine Nat. Libr., xxxvii, 200.

A. gauræ S. & A.*

1797. S. & A., Insects Ga., ii, 197, pl. 99, *Phalæna*.

1841. Westw., in Jardine Nat. Libr., xxxvii, 200, pl. 24, f. 4, *Alaria*.

1852. Gn., Spec. Gen., Noct., ii, 170, *Rhodophora*.

1857. Wlk., C. B. Mus., Het., xi, 675, *Alaria*.

1882. Smith, Trans. Am. Ent. Soc., x, 224, *Alaria*.
matutina Hbn.

1823. Hbn., Zutræge, 279, ff. 557, 558, *Porphyria*.

1852. Gn., Spec. Gen., Noct., ii, 170, pr. syn.

1857. Wlk., C. B. Mus., Het., xi, 675, pr. syn.

HABITAT.—Southern and Southwestern States; Colorado.

A. florida Gn.*

1852. Gn., Spec. Gen., Noct., ii, 171, pl. ii, f. 7, *Rhodophora*.

1857. Wlk., C. B. Mus., Het., xi, 675, *Alaria*.

1865. Grt., Proc. Ent. Soc., Phil., iii, 4, *Alaria*.

1869. Saund., Can. Ent., ii, 6, larva

1869. Croft, Can. Ent., ii, 36, habits of larva and imago.

1879. Saund., Can. Ent., iii, 76, life history.

1879. Kellicott, No. Amer. Ent., i, 30, habits.

1881. Smith, Bull. Bkln. Ent. Soc., iv, 28, habits.

1882. Putman-Cramer, Papilio, ii, 34, habits.

HABITAT.—Canada; United States, east of the Rocky Mountains; Utah, July.

The type is probably with M. Oberthür, at Rennes. This species is in the Harris collection under the name *Cerura rosea*.

A. citronellus G. & R.*

1870. G. & R., Trans. Am. Ent. Soc., iii, 180, pl. ii, f. 79, *Heliothis*.

1875. Grt., Check List, Noct., 19, note 25, *Oxylos*.

1882. Grt., Can. Ent., xiv, 172, *Heliothis*.

1882. Smith, Trans. Am. Ent. Soc., x, 224, *Alaria*.

1882. Grt., New List, 35, *Oxylos*.

HABITAT.—Texas; Colorado.

I have not seen the type, nor do I know where it is to be found.

Genus RHODOSEA Grt.

1883. Grt., Can. Ent., xv, 5, 109.

R. julia Grt.*

1883. Grt., Can. Ent., xv, 5, *Rhodosea*.

1883. Grt., Proc. Am. Phil. Soc., xxi, 165, *Rhodosea*.

HABITAT.—New Mexico; Arizona.

A type is in the National Museum from my collection. Mr. Grote gave it me years ago. Other specimens, also marked "type," are in Mr. Neumœgen's collection.

Genus **RHODODIPSA** Grt.

1877. Grt., Bull. Geol. Surv., III, 797.

R. volupia Fitch.*

1858. Fitch, 12th Rept., Trans. N. Y. State Agl. Soc., for 1857, 900-908, *Alaria*.

1877. Grt., Bull. Geol. Surv., III, 797, *Rhododipsa*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 47, *Rhododipsa*.

1882. Grt., Ill. Essay, 62, pl. III, f. 33, *Rhododipsa*.

1882. Smith, Trans. Am. Ent. Soc., x, 250, *Alaria*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 174, *Rhododipsa*.

HABITAT.—Colorado; Texas.

Fitch's type I saw in 1882, with Dr. A. E. Foote, in Philadelphia. It was in very poor condition, yet recognizable. What has become of it since and whether or not it still has an existence, I do not know. The species is, however, well known and correctly named in collections.

R. miniana Grt.

1881. Grt., Papilio, I, 175, *Rhododipsa*.

1882. Grt., Papilio, II, 64, pl. I, ff. 1 and 2, *Rhododipsa*.

1882. Smith, Trans. Am. Ent. Soc., x, 251, *Rhododipsa*.

HABITAT.—New Mexico.

The type is with Prof. Snow, at Lawrence, Kansas.

Genus **TRIOCNEMIS** Grt.

1881. Grt., Papilio, I, 77.

T. saporis Grt.*

1881. Grt., Papilio, I, 77, *Triocnemis*.

HABITAT.—Colorado; Washington; California.

Types are in the Edwards and Neumœgen collections.

Genus **PSEUDACONTIA** Smith.

1882. Smith, Trans. Am. Ent. Soc., x, 246.

P. crustaria Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 70, *Acontia*.

1882. Smith, Trans. Am. Ent. Soc., x, 247, *Pseudacontia*.

HABITAT.—Nebraska; Colorado.

The types are in the Tepper collection. The specimen so labeled in the British Museum is unspread and, I think, erroneously determined.

Genus **HELIODORA** Neum.

1891. Neum., Can. Ent., XXIII, 125.

H. magnifica Neum.

1891. Neum., Can. Ent., XXIII, 125, *Heliodora*.

HABITAT.—Houston, Texas.

The type is with Mr. Neumœgen.

Genus **SCHINIA** Hbn.
1816. Hbn., Verzeichniss, 281.

I use this term here in the same broad sense in which I used it in my Revision of the Heliothinae, Trans. Am. Ent. Soc., x, 225. It is quite likely that the large number of additional species constantly turning up may require its subdivision and the use of some of the generic terms discarded by me. The line of division may perhaps be that indicated in the Revision; but a better may be found on renewed study. The genera included under the above term are:

Tamila, Gn., Spec. Gen., Noct., II, 176.

Anthæcia, Bdv., Ind. Meth., 162.

Lygranthæcia, G. and R., Trans. Am. Ent. Soc., IV, 432.

Euleucyptera, Grt., Proc. Ent. Soc. Phil., IV, 329.

Tricopsis, Grt., Bull. Buff. Soc. Nat., Sci., II, 76.

Oria, Hbn., Verzeichniss, 238.

Porrina, Grt., Bull. Geol. Surv., III, 798.

Besides these, Mr. Grote has, on the characters pointed out by me, used the terms *Trichosellus* and *Canidia* in his Revised Check List of 1891. Some of these names may come into use later; but of these *Lygranthæcia* has perhaps the weakest of all claims to consideration. Of the species treated in the above revision, the tibial armature and wing maculation are there figured; but no reference to these figures is here made.

S. chrysellus Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 76, *Tricopsis*.

1883. Smith, Trans. Am. Ent. Soc., x, 227, *Schinia*.

HABITAT.—Texas, March, May to October; Colorado; New Mexico. The type is in the British Museum.

S. velaris Grt.*

1879. Grt., Can. Ent., XI, 197, *Tamila*.

1883. Smith, Trans. Am. Ent. Soc., x, 229, *Schinia*.
ochreifascia Smith.

1883. Smith, Trans. Am. Ent. Soc., XVIII, 126, *Schinia*.

HABITAT.—California, July and August.

Mr. Grote's type is in the British Museum; my types are in the National Museum. I was quite surprised to find Mr. Grote's type the same as my species. It means that the specimens I have seen so named in American collections are erroneously determined and that my description and figures in the Revision apply to some other, perhaps undescribed, species. I can not remember from what collection I had my specimens of *velaris*.

S. hulestia Tepper.

1883. Tepper, Trans. Am. Ent. Soc., x, 228, *Schinia*.

HABITAT.—Texas; Colorado.

The type is in the Tepper collection,

S. aleucis Harv.*

1875. Harv., Can. Ent., VII, 117, *Tricopis*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 10, pl. II, f. 5, *Tricopis*.

1883. Smith, Trans. Am. Ent. Soc., X, 228, *Schinia*.

HABITAT.—Texas in May and October.

The type is in the British Museum.

S. cumatilis Grt.*

1865. Grt., Proc. Ent. Soc. Phil., IV, 330, pl. II, f. 6, *Euleucyptera*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Euleucyptera*.

1877. Grt., Bull. Geol. Surv., III, 798, *Euleucyptera*.

1879. Grt., Can. Ent., XI, 207, *Euleucyptera*.

1883. Smith, Trans. Am. Ent. Soc., X, 228, *Schinia*.

sulmula Strk.

1879. Strk., Rept. Chief Eng., 1878-79, p. 1862, pl. II, f. 5, *Heliothis*.

1879. Grt., Can. Ent., XI, 207, pr. syn.

HABITAT.—Colorado, Platte Cañon in August; New Mexico.

Mr. Grote's type is in the collection of the American Entomological Society. Mr. Strecker has his own type.

S. tenuescens Grt.

1883. Grt., Can. Ent., XV, 128, *Lygranthacia*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

S. blundulata Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 129, *Schinia*.

HABITAT.—Central Colorado.

The type is in Mr. Neumægen's collection.

S. sexplagiata Smith.*

1891. Smith, Trans. Am. Ent. Soc., XVIII, 124, *Schinia*.

HABITAT.—Foothills near Denver, Colorado.

The type is in the National Museum.

S. trifascia Hbn.*

1818. Hbn., Zutrage, I, 17, ff. 33, 34, *Schinia*.

1874. Grt., Proc. Bost. Soc. N. H., XVII, 242, *Schinia*.

1880. Grt., Can. Ent., XII, 84, *Schinia*.

1883. Smith, Trans. Am. Ent. Soc., X, 228, *Schinia*.

lineata Wlk.

1857. Wlk., C. B. Mus., Het., XII, 830, *Anthophila*.

1891. Butler, Entomologist, XXIV, 292, pr. syn.

HABITAT.—United States east of the Rocky Mountains; Denver, Colorado.

I did not see Walker's type and give the above synonymy on Mr. Butler's authority. The name was not on my list and I overlooked the specimen.

***S. gracilentia* Hbn.**

1818. Hbn., Zuträge, I, 8, ff. 5, 6, *Schinia*.
 1816. Hbn., Verzeichniss, 282, *Schinia*.
 1880. Grt., Can. Ent., XII, 84, *Schinia*.
 1883. Smith, Trans. Am. Ent. Soc., x, 228, *Schinia*.
oleagina Morr.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 67, *Schinia*.
 1875. Grt., Can. Ent., VII, 222, pr. syn.
imperspicua Strk.
 1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*.
 1879. Grt., Can. Ent., XI, 29, pr. syn.

HABITAT.—Southern States; Texas.

Mr. Morrison's type was described from the Graef collection as a variety of *gracilentia* and Mr. Grote made it a synonym. Mr. Strecker's type is in his own collection.

S. simplex* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 129, *Schinia*.

HABITAT.—Colorado, foothills, July.

The types are in the National Museum.

***S. arefacta* Hy. Edw.**

1884. Hy. Edw., Papilio, IV, 123. *Tamila*.

HABITAT.—Florida.

The type is in the Neumögen collection.

S. unimacula* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 126, *Schinia*.

HABITAT.—Colorado.

Types are in Mr. Neumögen's collection and in the National Museum.

S. obliqua* Smith.

1882. Smith, Trans. Am. Ent. Soc., x, 229, *Schinia*.

HABITAT.—Arizona.

Types are in the National Museum and in the Neumögen collection.

***S. bifascia* Hbn.**

1818. Hbn., Zuträge, I, 14, ff. 55, 56, *Schinia*.
 1816. Hbn., Verzeichniss, 281, *Schinia*.
 1880. Grt., Can. Ent., XII, 85, *Schinia*.
 1883. Smith, Trans. Am. Ent. Soc., x, 229, *Schinia*.

HABITAT.—Georgia; Arizona; Colorado.

S. nundina* Dru.

1770. Drury, Illustr., I, 36, pl. 18, f. 5, *Noctua*.
 1837. Drury, Illustr., ed. Westw., I, 34, pl. 18, f. 5, *Acontia*.
 1852. Gn., Spec. Gen., Noct., II, 176, *Tamila*.
 1857. Wlk., C. B. Mus., Het., XII, 697, *Tamila*.

1864. Grt., Proc. Ent. Soc. Phil., III, 4, *Tamila*.
 1873. Grt. Bull. Buff. Soc. Nat. Sci., I, 121, *Heliothis*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Tamila*.
 1883. Smith, Trans. Am. Ent. Soc., X, 229, *Schinia*.

nigrireana Haw.

1810. Haw., Lep., Britt., 266, *Noctua*.
 1829. Steph., Ill. Br. Ent., Haust., III, 114.
 1852. Gn., Spec. Gen., Noct., II, 176, pr. syn.

HABITAT.—Middle, Southern, and Central States; New Jersey in July.

S. parmeliana Hy. Edw.

1882. Hy. Edw., Papilio, II, 14, *Lygranthæcia*.
 1883. Smith, Trans. Am. Ent. Soc., X, 248, *Lygranthæcia*.
 1891. Smith, Trans. Am. Ent. Soc., XVIII, *Lygranthæcia*.

HABITAT.—Maryland.

The unique type is in Mr. Schoenborn's collection. It has a remarkable resemblance to *nundina*, with a totally different ground color.

S. acutilinea Grt.*

1878. Grt., Can. Ent., X, 232, *Lygranthæcia*.
 1882. Grt., Ill. Essay, 63, pl. III, f. 34, *Lygranthæcia*.
 1883. Smith, Trans. Am., Ent. Soc., X, 229, = *separata*.
separata Grt.

1879. Grt., Can. Ent., XI, 198, *Lygranthæcia*.
 1883. Smith, Trans. Am. Ent. Soc., X, 229, *Schinia*.

HABITAT.—Colorado, Glenwood Springs in August; Nevada; Montana; Utah.

Both the types are in the British Museum. After renewed examination and a comparison of other material, I still consider them identical. *Acutilinia* is darker and has the margins of the lines more emphasized; but this fades gradually into the *separata* form. I was in error in using this latter name for the species, since *acutilinea* was earlier described. I was also in error in making *balba* and *valsinghani* synonymous with this species.

S. balba Grt.

1881. Grt., Papilio, I, 156, *Lygranthæcia*.
 1883. Smith, Trans. Am. Ent. Soc., X, 229, = *separata*.

HABITAT.—Arizona.

The type is with Mr. Neumœgen; other specimens in the British Museum.

S. coercita Grt.

1881. Grt., Papilio, I, 156, *Lygranthæcia*.
 1883. Smith, Trans. Am. Ent. Soc., X, 248, *Lygranthæcia*.

HABITAT.—Arizona.

The type is said to be with Mr. Neumœgen; other specimens are in the British Museum. Comparing *coercita* and *balba*, they are closely allied, the former having a wider median space and both ordinary spots evident, while the latter has the reniform only, marked. The

species of *Schinia* are much more numerous and closely allied than I suspected in 1882, and the two preceding are fairly marked and both distinct from *separata*, as species go here.

***S. walsinghami* Hy. Edw.**

1881. Hy. Edw., *Papilio*, I, 20, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 229, *Schinia separata*.

HABITAT.—Oregon.

A type specimen is in the Edwards collection, while a very fine series is in the British Museum. A study of the latter shows that the species is perfectly distinct from *separata* and that my reference in 1882 was hasty and based on insufficient material. The specimen in Mr. Edwards's collection really gives no adequate idea of the species.

S. brucei* Smith.

1891. Smith, Trans. Am. Ent. Soc., xviii, 125, *Schinia*.

HABITAT.—Colorado, South Park, and Denver.

Types are in the National Museum and in the Rutgers College collection.

S. lynx* Gn.

1852. Gn., Spec. Gen., Noct., II, 185, *Anthæcia*.

1857. Wlk., C. B. Mus., Het., XII, 604, *Anthæcia*.

1864. Grt., Proc. Ent. Soc. Phil., II, 343, pl. VI, f. 6, *Anthæcia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 120, *Heliothis*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, *Melicleptria*.

1875. Grt., Check List Noctuidæ, 18, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 230, *Schinia*.

HABITAT.—Massachusetts to Florida, west to the Mississippi; Alabama in September.

The type is in the British Museum.

S. roseitincta* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 278, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 248, *Lygranthæcia*.

1891. Smith, Trans. Am. Ent. Soc., xviii, 124, *Lygranthæcia*.

1891. Smith, List Lepidoptera, 54, *Schinia*.

exaltata Hy. Edw.

1884. Hy. Edw., *Papilio*, IV, 124, *Melicleptria*.

1891. Smith, Trans. Am. Ent. Soc., xviii, 124, pr. syn.

HABITAT.—Texas, April and June; Colorado.

Dr. Harvey's type is in the British Museum, while typical specimens of Mr. Edwards' species are in his collection. They are alike specifically, as I have already stated.

S. saturata* Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 74, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 230, *Schinia*.

rubiginosa Strk.

1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 230, pr. syn.

HABITAT.—Massachusetts; Texas; Kansas; Southern California; Georgia in October; Florida.

Mr. Grote's type should be in the collection of the American Entomological Society, but I have not found it there. Mr. Strecker's type is in his own collection. In the British Museum are specimens labeled by Mr. Grote which are the same as the species described by me in the "Revision."

S. diffusa* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 125, *Schinia*.

HABITAT.—South Park, Colorado.

The types are in the National Museum.

S. sordida* Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 230, *Schinia*.

HABITAT.—Selma, Alabama; Texas.

The type is in the National Museum.

S. tertia* Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 212, *Tamila*.

1875 Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Tamila*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 10, *Tamila*.

1882. Smith, Trans. Am. Ent. Soc., x, 231, *Schinia*.

HABITAT.—Texas, May, September, and October.

The type is in the British Museum.

S. albafascia* Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 231, *Schinia*.

HABITAT.—Utah, Fort Thornburgh; South Park, Colorado, August.

The type is in the U. S. National Museum.

S. regia* Strk.

1876. Strk., Lep. Rhop. et Het., 121, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 231, *Schinia*.

HABITAT.—Kansas; Texas; Colorado.

The type is with Mr. Strecker.

***S. sanguinea* Geyer.**

1832. Geyer, Zuträge, IV, 9, ff. 613, 614, *Oria*.

1852. Gn., Spec. Gen., Noct., II, 167, *Oria*.

1857. Wlk., C. B. Mus., Het., XI, 672, *Oria*.

1865. Grt., Proc. Ent. Soc. Phil., III, 4, *Oria*.

1877. Grt., Bull. Geol. Surv., III, 798, *Porrina*.

1883. Smith, Trans. Am. Ent. Soc., x, 232, *Schinia*.
carminosa Neum.

1883. Neum., Papilio, III, 142, *Schinia*.

1891. Smith, List Lepid., 54, pr. syn.

HABITAT.—Southern States; Florida; Texas.

Mr. Neumægen's type is in his own collection. Mr. Neumægen called attention to the fact that two forms were confused under the

term *sanguinea* and described the smaller and most intensely colored form as *carmosina*. Unfortunately that is exactly the form figured by Geyer, and Mr. Strecker had previously recognized that fact and described as *gloriosa* the larger, paler form.

S. gloriosa* Strk.

1876. Strk., Lep. Rhop. et Het., 132, *Heliothis*.
 1883. Smith, Trans. Am. Ent. Soc., xviii, 249, *Heliothis*.
sanguinea † Neum.
 1883. Neum., Papilio, iii, 142, *Schinia*.

HABITAT.—Texas.

The type is with Mr. Strecker.

***S. cupes* Grt.**

1875. Grt., Trans. Am. Ent. Soc., v, 113, *Heliothis*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 311, pl. iii, f. 4, *Heliothis*.
 1883. Smith, Trans. Am. Ent. Soc., x, 232, *Schinia*.
 1883. Grt., Proc. Am. Phil. Soc., xxi, 165, *Heliothis*.
 1890. Grt., Revised Check List, 36, *Trichosellus*.
crotchii Hy. Edw.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 135, *Heliothis*.
 1883. Smith, Trans. Am. Ent. Soc., x, 232, pr. syn.

HABITAT.—Texas, May; Colorado; Oregon; Washington; California.

The types, both of *cupes* and *crotchii* are in the British Museum.

S. jaguarina* Gn.

1852. Gn., Spec. Gen., Noct., ii, 184, pl. 9, f. 11, *Anthæcia*.
 1857. Wlk., C. B. Mus., Het., xi, 694, *Anthæcia*.
 1864. Grt., Proc. Ent. Soc. Phil., iii, 528, *Anthæcia*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 120, *Heliothis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 126, *Meliclectria*.
 1877. Uhler, Bull. Geol. Surv., iii, 769, *Anthæcia*.
 1883. Smith, Trans. Am. Ent. Soc., x, 232, *Schinia*.

HABITAT.—Georgia; Nebraska in August; Colorado; Kansas; Texas.

The type is with M. Oberthür, at Rennes.

S. arcifera* Gn.

1852. Gn., Spec. Gen., Noct., ii, 184, *Anthæcia arcigera*.
 1852. Gn., Spec. Gen., Noct., iii, 399, *Anthæcia arcifera*.
 1857. Wlk., C. B. Mus., Het., xi, 694, *Anthæcia*.
 1863. Grt., Proc. Ent. Soc. Phil., ii, 340, pl. vi, f. 3, *Anthæcia*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 119, *Heliothis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 34, *Meliclectria*.
 1883. Smith, Trans. Am. Ent. Soc., x, 232, *Schinia*.
spraguei Grt.
 1863. Grt., Proc. Ent. Soc. Phil., ii, 340, pl. vi, ff. 4, 5, *Anthæcia*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 120, *Heliothis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 34, *Meliclectria*.
 1875. Morr., Proc. Bost. Soc. N. H., xviii, 123, pr. syn.
 1883. Smith, Trans. Am. Ent. Soc., x, 232, *Schinia*.

HABITAT.—Eastern and Middle States, August and September; New Mexico; Texas; Kansas.

Guenee's type is the Oberthür collection. I have not been able to locate Mr. Grote's type. Mr. Grote described from a number of specimens from various collections. The two names seem to refer to the sexes and not to distinct varieties.

***S. petulans* Hy. Edw.**

1884. Hy. Edw., *Papilio*, iv, 123, *Anthracia*.

HABITAT.—Florida.

The type is in Mr. Neumögen's collection.

S. spinosæ* Gn.

1852. Gn., *Spec. Gen., Noct.*, ii, 182, pl. ix, f. 10, *Heliothis*.

1857. Wlk., *C. B. Mus., Het.*, xi, 687, *Heliothis*.

1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, i, 118, *Heliothis*.

1883. Smith, *Trans. Am. Ent. Soc.*, x, 233, *Schinia*.

1890. Grt., *Revised Check List*, 34, *Eupanychia*.

hirtella G. & R.

1866. G. & R., *Proc. Ent. Soc. Phil.*, vi, 19, pl. iii, f. 3, *Anthracia*.

1868. G. & R., *Trans. Am. Ent. Soc.*, iii, 180, pr. syn.

1870. Grt., *Trans. Am. Ent. Soc.*, iv, 432, pr. syn.

HABITAT.—Canada; Eastern, Middle, and Central States.

Guenee's type came from the Coll. Feisthamel—where that is at present, I can not say. The whereabouts of the Grote & Robinson type is also unknown to me. It is one of the species that should be in the collection of the American Entomological Society.

***S. crenilinea* Smith.**

1891. Smith, *Trans. Am. Ent. Soc.*, xviii, 129, *Schinia*.

HABITAT.—Southern Texas.

The types are in the Neumögen collection.

***S. lupatus* Grt.**

1875. Grt., *Can. Ent.*, vii, 224, *Heliothis*.

1883. Smith, *Trans. Am. Ent. Soc.*, x, 233, *Schinia*.

1883. Grt., *Can. Ent.*, xv, 128, *Heliothis*.

HABITAT.—Texas.

The type of this species is in the British Museum. The foretibiæ have one inner and one outer claw or spine. Wing form of *Schinia*. Looks like an *Aletia* at first sight, with a small black orbicular, and a black, white-lined reniform. I am not at all sure that I had this species before me in 1883, and at all events have not had it since.

S. packardii* Grt.

1864. Grt., *Proc. Ent. Soc. Phil.*, iii, 528, pl. vi, f. 2, *Anthracia*.

1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, i, 120, *Heliothis*.

1874. Grt., *Bull. Buff. Soc. Nat. Sci.*, ii, 34, *Melicleptria*.

1877. Grt., *Bull. Geol. Surv.*, iii, 798, *Lyranthracia*.

1883. Smith, *Trans. Am. Ent. Soc.*, x, 234, *Schinia*.

mortua Grt.1864. Grt., Proc. Ent. Soc. Phil., III, 528, pl. VI, f. 1, *Anthæcia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 120, *Heliothis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, *Melicleptria*.

1877. Grt., Bull. Geol. Surv., III, 798, † pr. syn.

1883. Smith, Trans. Am. Ent. Soc., x, 234, *Schinia*.*nobilis* Grt.1864. Grt., Proc. Ent. Soc. Phil., III, 529, pl. VI, f. 3, *Anthæcia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 120, *Heliothis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, † *packardii*, var.1883. Smith, Trans. Am. Ent. Soc., x, 234, *Schinia*.

HABITAT.—Texas, Arizona, Colorado.

The types are all in the collection of the American Entomological Society. The differences between them consist in the relative distinctness of the maculation, the discal and basal black spot of secondaries disappearing entirely in *mortua*. In retaining the term *packardii* for this species instead of *mortua*, which has priority by half a page, I feel sure that I am in accord with Mr. Grote's wishes on the subject.

S. bicuspidata Smith.1891. Smith, Trans. Am. Ent. Soc., XVIII, 127, *Schinia*.

HABITAT.—Southern Texas.

The type is with Mr. Neumögen.

S. thoreauli G. & R.*1868. G. & R., Trans. Am. Ent. Soc., III, 181, pl. II, f. 80, *Anthæcia*.1870. G. & R., Trans. Am. Ent. Soc., IV, 432, *Lygranthæcia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 115, *Lygranthæcia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 33, *Lygranthæcia*.1883. Smith, Trans. Am. Ent. Soc., x, 234, *Schinia*.

HABITAT.—Texas; Alabama; Kansas; Indiana.

I have not seen the type, nor do I know where it is.

S. marginata Haw.*1810. Haw., Lep. Britt., 374, *Crambus*.1834. Steph., Ill. Brit. Ent., Haust., IV, 26, *Pyralis*.1836. Wood, Ind. Ent., pl. 54, f. 68, *Pyralis*.1852. Gn., Spec. Gen., Delt., 128, *Anthæcia*.1857. Westw. & Humph., Brit. Moths, II, 91–92, *Pyralis*.1863. Grt., Proc. Ent. Soc. Phil., II, 339, *Anthæcia*.1870. G. & R., Trans. Am. Ent. Soc., IV, 432, *Lygranthæcia*.*rivulosa* Gn.1852. Gn., Spec. Gen., Noct., II, 184, pl. IX, f. 12, *Anthæcia*.

1854. Gn., Spec. Gen., Delt., 128, pr. syn.

1857. Wlk., C. B. Mus., Het., XI, 694, *Anthæcia*.1863. Grt., Proc. Ent. Soc. Phil., II, 339, *Anthæcia*.1883. Smith, Trans. Am. Ent. Soc., x, 234, *Schinia*.*divergens* Wlk.1857. Wlk., C. B. Mus., Het., XII, 836, *Microphysa*.

1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.

contracta Wlk.1857. Wlk., C. B. Mus., Het., XII, 836, *Microphysa*.

1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.

designata Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 958, *Euclidia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 87, pr. syn.

HABITAT.—Middle, southern, and central States, July and August.

A typical specimen of Guenée's species and all of Walker's types are in the British Museum. I did not see that of *M. divergens*; but the others are as referred by Messrs. Grote and Robinson and I have no doubt this is also correctly placed in the synonymy.

S. digitalis* Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 128, *Schinia*.

HABITAT.—Dallas, Texas.

The type is in the National Museum.

***S. constricta* Hy. Edw.**

1882. Hy. Edw., Papilio, II, 128, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.

HABITAT.—North Carolina.

The type is in Mr. Neumægen's collection.

***S. tuberculum* Hbn.**

1823. Hbn., Zuträge, III, 517, 518, *Melicleptria*.

1852. Gn., Spec. Gen., Noct., II, 185, *Anthæcia*.

1857. Wlk., C. B. Mus., Het., XI, 695, *Anthæcia*.

1863. Grt., Proc. Ent. Soc. Phil., II, 343, *Anthæcia*.

1864. Grt., Proc. Ent. Soc. Phil., III, 531, *Melicleptria*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 119, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 247, *Anthæcia*.

dorsilutea Wlk.

1857. Wlk., C. B. Mus., Het., XI, 695, *Anthæcia*.

HABITAT.—Pennsylvania; Georgia; Florida.

The type of *dorsilutea* is the same as the *tuberculum* of the Grote collection, which I believe to be correctly identified. The fore tibiae have one inner and two outer claws. In appearance the species resembles *lynæ*; but the median and s. t. lines are more ragged, median space narrower, ordinary spots not distinct; black border of secondaries broad. Walker's species is from "locality unknown."

S. brevis* Grt.

1864. Grt., Proc. Am. Ent. Soc., III, 530, pl. VI, f. 4, *Anthæcia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 119, *Heliothis*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.

var. atrites Grt.*

1864. Grt., Proc. Am. Ent. Soc., III, 530, pl. VI, f. 5, *Anthæcia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 119, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.

HABITAT.—Colorado; New Mexico; Illinois and Massachusetts in September; New York; Iowa.

The types should be in Philadelphia in the Coll. American Ent. Soc., but I have not been able to find them there.

***S. septentrionalis* Wlk.**

1858. Wlk., C. B. Mus., Het., xv, 1744, *Omia*.

HABITAT.—Illinois.

This seems a good species, the type of which is in the British Museum. There are two inner and three outer claws to the fore tibia. Secondaries black; primaries very dark; terminal space a little lighter; median space with a little yellow intermixed; median lines narrow, white.

***S. concinna* Smith.**

1891. Smith, Trans. Am. Ent. Soc., xviii, 128, *Schinia*.

HABITAT.—Southern Texas.

The type is in the Neumægen collection.

S. errans* Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.

HABITAT.—Arizona.

The type is in the National Museum.

***S. inclara* Strk.**

1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.

HABITAT.—Texas.

The type is with Mr. Strecker.

S. meskeana* Grt.

1875. Grt., Can. Ent., vii, 234, *Lygranthæcia*.

1881. Grt., Papilio, i, 157, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, *Schinia*.
fastidiosa Strk.

1876. Strk., Lep. Rhop. et Het., 121, *Heliothis*.

1876. Grt., Can. Ent., viii, 26, pr. syn.

rufimedia Grt.

1883. Grt., Bull. Bkln. Ent. Soc., iii, 31, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 235, pr. syn.

HABITAT.—Texas; Florida.

The types of Mr. Grote's species are in the British Museum, and a specimen of *rufimedia*, also marked "type" by Mr. Grote, is in the Hulst collection. The only observable difference between them is that *rufimedia* has a little more black on the secondaries. Mr. Strecker's type is in his own collection.

***S. limbalis* Grt.**

1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 421, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 247, *Lygranthæcia*.

HABITAT.—Kansas.

The type is in the British Museum and is a species I had not before seen. The tibial armature can not be made out as the legs are curled under in the specimen. It resembles *arcifera*, but is smaller and without median lines.

S. ultima Strk.*

1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*

1881. Grt., Papilio, I, 157, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 236, *Schinia*.

HABITAT.—Texas.

The type is in the Strecker collection.

G. scissa Grt.*

1876. Grt., Proc. Bost. Soc. N. H., xviii, 451, *Lygranthæcia*.

1883. Smith, Trans. Am. Ent. Soc., x, 252, *Schinia*.

1890. Grt., Revised Check List, 36, *Canidia*.

HABITAT.—Florida.

The type is in the British Museum. It looks more like *Melicleptria* than the specimen retained by Mr. Thaxter. Mr. Grote's genus is based, apparently, on the characters I pointed out, but if the species is removed from *Schinia*, it must go to *Pseudotamila*.

S. siren Strk.

1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 248, *Heliothis*.

HABITAT.—Texas.

The type is with Mr. Strecker. The tibial armature is as in *ultima*.

S. nubila Strk.

1876. Strk., Lep. Rhop. et Het., 122, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 248, *Heliothis*.

HABITAT.—Texas.

The type is with Mr. Strecker. The tibial armature is as in *ultima*.

S. lanul Strk.

1877. Strck., Lep. Rhop. et Het., 132, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 249, *Heliothis*.

HABITAT.—Texas.

The type is with Mr. Strecker. The anterior tibiæ have an inner and four outer claws, and the species is thus related to *tertia*.

By a regrettable oversight the three last-named species were omitted from my list of Lepidoptera. The accident happened because in my Revision they were among the unknown species, and, after seeing the types and annotating my copy, I failed to enter them in the list of species where they belonged.

Genus **DASYSPOUDEA** Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 213.

D. lucens Morr.*1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 69, *Heliothis*.1882. Grt., Can. Ent., xiv, 175, *Tamila*.1883. Smith, Trans. Am. Ent. Soc., x, 214, *Dasysspoudea*.
var. *luxuriosa* Grt.1882. Grt., Can. Ent., xiv, 175, *Tamila*.

1883. Smith, Trans. Am. Ent. Soc., x, 214, pr. syn.

HABITAT.—Nebraska; Montana; Colorado; New Mexico.

I have not seen Mr. Morrison's type, nor do I know where it is at present. The type of the variety is with Mr. Neumögen.

D. meadii Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 121, pl. 3, f. 5, *Heliothis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 35, et 220, *Tamila*.1879. Strk., Rept. Chief Eng., 1878-'79, p. 1862, *Heliothis*.1883. Smith, Trans. Am. Ent. Soc., x, 214, *Dasysspoudea*.**HABITAT**.—Montana; Colorado in July; Black Hills.

The type is in the British Museum.

Genus **PSEUDANTHÆCIA** Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 213.

P. tumida Grt.*1880. Grt., Bull. Bkln. Ent. Soc., iii, 30, *Lygranthæcia*.1882. Grt., Can. Ent., xiv, 186, *Tamila*.1883. Smith, Trans. Am. Ent. Soc., x, 213, *Pseudanthæcia*.**HABITAT**.—Colorado.

Mr. Grote had specimens from his own collection and from those of Tepper and Neumögen; but neither in the British Museum nor in the Tepper collection is there a "type."

Genus **STYLOPODA** Smith.

1891. Smith, Trans. Am. Ent. Soc., xviii, 131.

S. cephalica Smith.*1891. Smith, Trans. Am. Ent. Soc., xviii, 131, *Stylopoda*.**HABITAT**.—California.

The type is in the National Museum.

Genus **SYMPISTIS** Hbn.

1816. Hübner, Verzeichniss, 257.

S. proprius Hy. Edw.1881. Hy. Edw., Papilio, i, 19, *Euros*.1883. Smith, Trans. Am. Ent. Soc., x, 213, *Sympistis*.**HABITAT**.—Siskiyou County, California.

The type is in the Edwards collection.

Genus **PSEUDOTAMILA** Smith.

1883. Smith, Trans. Am. Ent. Soc., x, 238.

P. vanella Grt.*

1877. Grt., Can. Ent., xi, 197, *Tamila*.

1883. Smith, Trans. Am. Ent. Soc., x, 239, *Pseudotamila*.

HABITAT.—Nevada; California.

The type is in the British Museum.

P. perminuta Hy. Edw.

1881. Hy. Edw., Papilio, i, 21, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 239, *Pseudotamila*.

HABITAT.—Sierra Nevada, California.

The types are in the Edwards collection.

Genus **MELAPORPHYRIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 75.

M. immortua Grt.*

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 75, 220, *Melaporphyria*.

1883. Smith, Trans. Am. Ent. Soc., x, 237, *Melaporphyria*.

HABITAT.—Massachusetts and New York in June; Colorado.

The type is in Dr. Lintner's collection at Albany.

M. prorupta Grt.

1873. Grt., Trans. Am. Ent. Soc., iv, 294, *Heliothis*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 118, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 238, *Melaporphyria*.

tenusta Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 133, *Melicleptria*.

1878. Grt., Bull. Geol. Surv., v, 183, pr. syn.

HABITAT.—California; Oregon.

The types should be in the American Ent. Society's collection; but I have not seen them there.

M. belladonna Hy. Edw.

1881. Hy. Edw., Papilio, i, 20, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 238, *Melaporphyria*.

1890. Grt., Revised Check List, 34, *Dysocnemis*.

HABITAT.—Utah.

The types are in the Edwards and Neumøgen collections.

M. oregona Hy. Edw.*

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 135, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 138, = *ononis*

1891. Butler, Entomologist, xxiv, 293, an sp. dist.

HABITAT.—Colorado; Nevada; Oregon.

Mr. Butler is quite correct in separating Mr. Edwards's species from *ononis*; but he is in error in charging Mr. Grote with the combination.

The blunder was mine, based on insufficient material. I am much less ready nowadays to believe in the specific identity of European and American species. *Oregona* is near to and represents *ononis*, as *phlogophagus* represents *dipsaceous*. So, also, Mr. Butler seems not to know that I am responsible for uniting *Adonisea* with *Melicleptria*, a union which I still consider perfectly proper.

Genus **MELICLEPTRIA** Hbn.

1816. Hübner, Verzeichniss, 262.

M. celeris Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 148, *Melicleptria*.

1882. Grt., New List, 36, *Euros*.

1882. Grt., Can. Ent., XIV, 171, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 244, *Melicleptria*.

HABITAT.—Southern California.

The type is in the Edwards collection.

M. pulchripennis Grt.*

1874. Grt., Proc. Bost. Soc. N. H., XVI, 241, *Melicleptria*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Adonisea*.

1882. Grt., Ill. Essay, 62, pl. III, f. 31, *Adonisea*.

1883. Smith, Trans. Am. Ent. Soc., x, 244, *Melicleptria*.
languida Hy. Edw.

1881. Hy. Edw., Papilio, I, 20, pr. var.

1883. Smith, Trans. Am. Ent. Soc., x, 244, pr. syn.

HABITAT.—California; Colorado.

I have not seen the type. The British Museum specimens seem not to be such; but are the species commonly so known in American collections.

M. græfiana Tepper.

1883. Tepper, Trans. Am. Ent. Soc., x, 245, *Melicleptria*.

HABITAT.—Southern California.

The type is in the Tepper collection.

M. villosa Grt.*

1864. Grt., Proc. Ent. Soc. Phil., III, 531, pl. VI, f. 6, *Melicleptria*.

1868. G. R., Trans. Am. Ent. Soc., III, 181, *Anthracia*.

1883. Smith, Trans. Am. Ent. Soc., x, 244, *Melicleptria*.
pauillus Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 118, pl. III, f. 6, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 244, pr. syn.
var. *persimilis* Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 117, pl. III, f. 11, *Heliothis*.

1883. Smith, Trans. Am. Ent. Soc., x, 244, pr. syn.

HABITAT.—Colorado; California.

The type of *villosa* should be in the collection of the American Entomological Society; but I have not found it there. The type of *pauillus* is in the Tepper collection; a type of *persimilis* is in the British Museum, and another specimen, also marked "type," is in the Tepper collection.

M. honesta Grt.1881. Grt., *Papilio*, 1, 77, *Melicleptria*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 245, *Melicleptria*.

HABITAT.—Mount Hood, Oregon.

The type is in the Neumægen collection.

M. sueta Grt.*1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, 1, 117, pl. III, f. 10, *Heliothis*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 245, *Melicleptria*.
californicus Grt.1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, 1, 149, *Heliothis*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 245, pr. syn.

HABITAT.—Colorado; California.

Types of both names are in the Tepper collection, and a specimen of *californicus*, also marked "type," is in the British Museum.**M. vaccinæ** Hy. Edw.1875. Hy. Edw., *Proc. Cal. Ac. Sci.*, vi, 134, *Melicleptria*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 251, *Melicleptria*.

HABITAT.—Sierra Nevada, California.

The type is in the Edwards collection.

M. septentrionalis Hy. Edw.*1884. Hy. Edw., *Papilio*, iv, 45, *Melicleptria*.

HABITAT.—Hudson Bay Territory.

The types are in the Neumægen collection. Mr. Neumægen thinks this is the same as *ononis* Fab. He may be right; I have not compared them.Genus **HELIOLONCHE** Grt.1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, 1, 115.**H. modicella** Grt.*1873. Grt., *Bull. Buff. Soc. Nat. Sci.*, 1, 116, pl. III, f. 12, *Heliolonche*.1875. Grt., *Bull. Buff. Soc. Nat. Sci.*, II, 220, *Heliolonche*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 242, *Heliolonche*.

HABITAT.—California, in June; Colorado.

The type is in the British Museum.

Genus **HELIOSEA** Grt.1875. Grt., *Bull. Buff. Soc. Nat. Sci.*, II, 220.**H. pictipennis** Grt.1875. Grt., *Bull. Buff. Soc. Nat. Sci.*, II, 220, *Heliosea*.1882. Grt., *Ill. Essay*, 62, pl. III, f. 32, *Heliosea*.1883. Smith, *Trans. Am. Ent. Soc.*, x, 239, *Heliosea*.1883. Grt., *Proc. Am. Phil. Soc.*, XXI, 172, *Heliosea*.

HABITAT.—California.

The type is in the British Museum; it has no legs, no head, and only two wings. Whether it was in that condition when the figure was made I can not say, of course.

Genus **HELIOPHANA** Grt.
1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 220.

H. mitis Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 116, pl. III, f. 7, *Melicleptria*.
1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Heliophana*.
1883. Smith, Trans. Am. Ent. Soc., x, 240, *Heliophana*.
obliquata Smith.
1891. Smith, Trans. Am. Ent. Soc., XVIII, 131, *Heliophana*.

HABITAT.—Texas; Mississippi.

Mr. Grote's type is in the British Museum; my type is with Mr. Neumögen. The two are but forms of one species, as I rather suspected when describing *obliquata*.

H. amaryllis Smith.*

1891. Smith, Trans. Am. Ent. Soc., XVIII, 130, *Heliophana*.

HABITAT.—California.

The type is in the National Museum.

H. bina Gn.

1852. Gn., Spec. Gen., Noct., II, 186, *Anthæcia*.
1857. Wlk., C. B. Mus., Het., XI, 695, *Anthæcia*.
1863. Grt., Proc. Ent. Soc. Phil., II, 334, *Anthæcia*.
1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 119, *Heliothis*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, *Melicleptria*.
1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 220, *Heliophana*.
1883. Smith, Trans. Am. Ent. Soc., x, 240, *Heliophana*.

HABITAT.—Nebraska; New York in June.

The type, which I have not seen, is with M. Oberthür, at Rennes.

Genus **XANTHOTHRIX** Hy. Edw.
1878. Hy. Edw., Proc. Cal. Ac. Sci., Pac. Coast Lep., No. 29.

X. ranunculi Hy. Edw.*

1878. Hy. Edw., Proc. Cal. Ac. Sci., Pac. Coast Lep., No. 29, July 1, 1878.
1883. Smith, Trans. Am. Ent. Soc., x, 241, *Xanthothrix*.

HABITAT.—California.

The type is in the Edwards collection. I have the paper in which it is described only as a separate and believe, indeed, that it has not been published in any other way.

X. neumögeni Hy. Edw.*

1881. Hy. Edw., Papilio, I, 101, *Xanthothrix*.
1882. Grt., Papilio, II, 122, *Euedwardsia*.
1883. Smith, Trans. Am. Ent. Soc., x, 241, *Xanthothrix*.
1883. Grt., Proc. Am. Phil. Soc., XXI, 165, *Euedwardsia*.

HABITAT.—California.

Types are in the Edwards and Neumögen collections.

Genus **AXENUS** Grt.

1873. Grt. Bull. Buff. Soc. Nat. Sci., I, 152.

A. arvalis Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 152, pl. IV, f. 8, *Axenus*.1883. Smith, Trans. Am. Ent. Soc., x, 242, *Axenus*.var. *ochraceus* Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 136, pr. var.

var. *amplus* Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 136, pr. var.

HABITAT.—Colorado; California.

Mr. Grote's type is in the British Museum; types of the varieties are in the Edwards collection. It is questionable whether these names can be retained, as a good series from any locality shows all the forms, with all intermediate variations.

Genus **HELIACA** H. Sch.

1853. H. Sch., Schmett. Eur., II, 370.

H. diminutiva Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 148, *Heliothis*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 34, *Melicoleptria*.1883. Smith, Trans. Am. Ent. Soc., x, 245, *Heliaca*.**HABITAT.**—California; Nevada; Colorado, South Park.

Types are in the Tepper collection and in the British Museum.

H. fasciata Hy. Edw.1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 134, *Melicoleptria*.1883. Smith, Trans. Am. Ent. Soc., x, 246, *Heliaca*.**HABITAT.**—Plover Co., Colorado.

The type is in the Edwards collection.

H. dubitans Tepper.1883. Tepper, Trans. Am. Ent. Soc., x, 246, *Heliaca*.**HABITAT.**—Nevada.

The type is in the Tepper collection.

H. nexilis Morr.*1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 102, *Entisioptis*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Melicoleptria*.1883. Smith, Trans. Am. Ent. Soc., x, 246, *Heliaca*.*elaborata* Hy. Edw.1881. Hy. Edw., Papilio, I, 21, *Melicoleptria*.

1883. Smith, Trans. Am. Ent. Soc., x, 246, pr. syn.

HABITAT.—Colorado; California in June.

Mr. Morrison's type is in the Tepper collection; Mr. Edwards's type is in his own collection.

Genus **ANARTA** Ochs.

1816. Ochs., Schmett. Eur., iv, 90.

A. acadiensis Beth.*1869. Beth., Trans. Nov. Sc. Inst. Nat. Sci., ii, 84, figure, *Anarta*.1869. Beth., Can. Ent., ii, 64, *Anarta*.**HABITAT.**—Nova Scotia.

The type is with Dr. Bethune. The species has been referred with more or less doubt to *myrtilli* Linn., and it may be that species. I am by no means satisfied that such is the case, however, and prefer to retain Dr. Bethune's name until careful comparisons can be made.

A. cordigera Thunb.*1788. Thunb., Mus. Nat. Ac. Ups. Diss., pt. vi, 72, f. 4, *Noctua*.1816. Hbn., Verzeichniss, 220, *Anarta*.1852. Gn., Spec. Gen., Noct., ii, 194, *Anarta*.1857. Wlk., C. B. Mus., Het., xi, 702, *Anarta*.1860. Moeschl., Wien. Ent. Monatschr., iv, 367, *Anarta*.*luteola* G. & R.1865. G. & R., Proc. Ent. Soc. Phil., iv, 493, pl. iii, ff. 5 and 6, *Anarta*.1869. Beth., Can. Ent., i, 87, *Anarta*.

1873. Strk., Lep. Rhop. et. Het., 40, pr. syn.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 31, pr. syn.

HABITAT.—Canada; Labrador; Colorado.

The type of Grote and Robinson's species should be in the collection of the American Entomological Society, and Mr. Strecker speaks of seeing it there in 1873. I have not found it from 1882, when I made my first notes on the collection, to 1891, when I again went over all the arranged material and found some few species previously overlooked.

A. melaleuca Thunb.*1791. Thunb., Ins. Suec., pars ii, 42, *Noctua*.1816. Hbn., Samml. Eur. Schmett., ii, pl. 415, *Sympistis*.1852. Gn., Spec. Gen., Noct., ii, 193, *Anarta*.1857. Wlk., C. B. Mus., Het., xi, 699, *Anarta*.1860. Moeschl., Wien. Ent. Monatschr., iv, 367, *Anarta*.1874. Grt., Proc. Bost. Soc. N. H., xvi, 244, *Anarta*.*bicycla* Pack.1867. Pack., Proc. Bost. Soc. N. H., xi, 41, *Anarta*.

1871. Stgr., Cat. Lep. Eur., 128, pr. syn.

1874. Grt., Proc. Bost. Soc. N. H., xvi, 244, pr. syn.

HABITAT.—Labrador.

Dr. Packard's type is in the collection of the Mus. Comp. Zoölogy at Cambridge. Mr. Morrison has labelled a specimen now in the National Museum as a "type," of *bicycla*.

A. melanopa Thunb.*1791. Thunb., Diss. Ent., ii, 42, f. 12, *Noctua*.1829. Bdv., Ind. Meth., 161, *Anarta*.1852. Gn., Spec. Gen., Noct., ii, 190, *Anarta*.

1857. Wlk., C. B. Mus., Het., xi, 697, *Anarta*.
 1879. Grt., Bull. U. S. Nat. Mus., xv, 160, *Anarta*.
 1875. Morr., Psyche, i, 44, *Anarta*.
nigrolunata Pack.
 1867. Pack., Proc. Bost. Soc. N. H., xi, 40, *Anarta*.
 1871. Stgr., Cat. Lep. Eur., 128, pr. syn.
 1874. Grt., Proc. Bost. Soc. N. H., xvi, 244, pr. syn.

HABITAT.—Labrador in July; Mt. Washington, New Hampshire; South Park, Colorado; Rocky Mts., 13,000 feet; Arctic America.

Dr. Packard's type is at Cambridge, in the Museum of Comparative Zoölogy.

A. quadrilunata Grt.*

1874. Grt., Proc. Bost. Soc. N. H., xvi, 244, *Anarta*.

HABITAT.—Colorado.

The type is in the British Museum.

A. schöenherrri Zett.*

1840. Zett., Ins. Lapp., 950, *Anarta*.
 1861. Stgr., Stett. Ent. Zeit., 1861, 373, *Anarta*.
leucocycla Stgr.
 1857. Stgr., Stett. Ent. Zeit., 1857, 296, *Anarta*.
 1860. Moeschl., Wien. Ent. Monatsch., iv, 367, pl. ix, f. 6, *Sympistis*.
 1861. Stgr., Stett. Ent. Zeit., 1861, 373, pr. syn.

HABITAT.—Labrador; Greenland; Lapland.

The Staudinger type is in his own collection. Perhaps it may be well to state that in my citations in this genus, in which so many species are circumpolar, I have not attempted to refer to well established European synonymy, nor to give references to all works in which the European insects are treated. I have tried only to credit the species and to give reference to the works more usually accessible to American students, following Staudinger in the bibliography.

A. richardsoni Curt.*

1834. Curt., App. to Ross, Narr. 2nd Voy., 72, pl. A, f. 11, *Hadena*.
 1857. Wlk., C. B. Mus., Het., xi, 706, *Anarta*.
 1867. Pack., Proc. Bost. Soc. N. H., xi, 39, *Anarta*.
algida Lef.
 1836. Lef., Ann. Soc. Ent. Fr., v, 395, pl. x, f. 5, *Anarta*.
 1852. Gn., Spec. Gen., Noct., ii, 192, *Anarta*.
 1857. Wlk., C. B. Mus., Het., xi, 699, *Anarta*.
 1860. Moeschl., Wien. Ent. Monatsch., iv, 367, *Anarta*.
 1871. Stgr., Cat. Lep. Eur., 128, pr. syn.
septentrionis Wlk.
 1857. Wlk., C. B. Mus., Het., xi, 700, *Anarta*.
 1891. Butler, Entomologist, xxiv, 293, pr. syn.

HABITAT.—Labrador in August; Repulse Bay; Lapland; Polaris Bay.

Walker's type is in the British Museum, and is the same as the *richardsonii* of the Grote and other collections.

A. secedens Wlk.1857. Wlk., C. B. Mus., Het., XII, 913, *Plusia*.

HABITAT.—Hudson's Bay territory.

The type is in the British Museum. It is a yellow winged *Anarta* in poor condition, and seems different from anything else in the collection. On the primaries the narrow, irregular, dentate, white s. t. line is followed by dark spots, and on the secondaries the outer black band is not defined.

A. impingens Wlk.*1857. Wlk., C. B. Mus., Het., XI, 700, *Anarta*.*nivaria* Grt.1875. Grt., Ann. Lyc. Nat. Hist. N. Y., XI, 107, *Anarta*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, = *curta*.*curta* Morr.1875. Morr., Ann. Lyc. Nat. Hist. N. Y., XI, 96, *Mamestra*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Anarta*.1880. Grt., Can. Ent., XII, 186, = *nivaria*.1881. Grt., Can. Ent., XIII, 126, *Anarta*.*perpura* Morr.1875. Morr., Proc. Ac. Nat. Sci., Phil., 1875, 66, *Orthosia*.1880. Grt., Bull. Bkln. Ent. Soc., III, 38, = *curta*.1880. Grt., Can. Ent., XII, 186, = *nivaria*.

HABITAT.—Colorado in July; "Rocky Mts."

Walker's type is in the British Museum; Mr. Grote's type I have not seen; Morrison's types are both in the Tepper collection. The locality, New York, given by Mr. Morrison for *O. perpura*, is certainly an error. Mr. Butler, from the specimens before him, suggests (Entomologist, XXIV, 293) that *impingens* is near to *nivaria*, but from my knowledge of other specimens I made the reference positively before Mr. Butler's note appeared.

A. membranosa Morr.1875. Morr., Ann. Lyc. Nat. Hist. N. Y., XI, 101, *Anarta*.

HABITAT.—White Mts., New Hampshire.

Mr. Morrison's type is probably in the Museum of the Boston Society of Natural History; but I have no memorandum of having seen it there.

A. lapponica Thunb.1792. Thunb., Diss. Ent., II, 42, f. 10, *Noctua*.1861. Stgr., Stett. Ent. Zeit., 1861, 381, *Anarta*.*amissa* Lefb.1836. Lefb., Ann. Soc. Ent. Fr., v, 397, pl. x, f. 6, *Anarta*.1852. Gn., Spec. Gen., Noct., II, 192, *Anarta*.1857. Wlk., C. B. Mus., Het., XI, 698, *Anarta*.1860. Moeschl., Wien. Ent. Monatschr., IV, 367, *Anarta*.

1861. Stgr., Stett. Ent. Zeit., 1861, 381, pr. syn.

HABITAT.—Greenland; Labrador.

A. kelloggi Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 133, *Anarta*.

HABITAT.—Tuolumne Co., California.

The type is in the Edwards collection.

A. zetterstedtii Stgr.*

1857. Stgr., Stett. Ent. Zeit., 1857, 294, *Anarta*.

1860. H. Sch., Neue Schmett. Eur., f. 166, *Anarta*.

1874. Moeschl., Stett. Ent. Zeit., 1874, 317, *Anarta*.

HABITAT.—Labrador; Lapland.

The type is with Dr. Staudinger.

A. quieta Hbn.

1805. Hbn., Schmett. Eur., Noct., 485, *Noctua*.

1852. Gn., Spec. Gen., Noct., II, 193, pl. VII, f. 11, *Anarta*.

1857. Wlk., C. B. Mus., Het., XI, 701, *Anarta*.

1861. Stgr., Stett. Ent. Zeit., 1861, 378, *Anarta*.

constricta Wlk.

1857. Wlk., C. B. Mus., Het., XI, 701, *Anarta*.

1891. Butler, Entomologist, XXIV, 293, pr. syn.

rigida Wlk.

1857. Wlk., C. B. Mus., Het., XI, 701, *Anarta*.

1891. Butler, Entomologist, XXIV, 293, pr. syn.

HABITAT.—Arctic coast of America. Lat. 67½–68.

Walker's types are in the British Museum and Mr. Butler's references to *quieta* agree with my own notes.

A. funebris Hbn.

1804. Hbn., Schmett. Eur., Noct., pl. 92, f. 433, *Noctua*.

1825. Tr., Schmett. Eur., v, 209, *Anarta*.

1852. Gn., Spec. Gen., Noct., II, 191, *Anarta*.

1857. Wlk., C. B. Mus., Het., XI, 698, *Anarta*.

1860. Moeschl., Wien. Ent. Monatschr., IV, 370, *Sympistis*.

HABITAT.—Labrador.

It is perhaps a little questionable whether Moeschler's specimens are really the European species. I have not seen them.

A. mimula Grt.

1883. Grt., Trans. Kans. Ac. Sci., VIII, 48, *Mamestra*.

HABITAT.—New Mexico.

The type is with Prof. Snow, to whose courtesy I owe the chance to examine the species and to make the above generic reference.

A. mimuli Behr.

1885. Behr, Bull. Cal. Ac. Sci., 1885, 62, *Anarta*.

HABITAT.—California.

I presume Dr. Behr has his type. I have not tried to identify the species.

Genus **ANNAPHILA** Grt.
1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 149.

A. diva Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 150, pl. iv, f. 14, *Annaphila*.

HABITAT.—California.

The type is in the British Museum.

A. casta Hy. Edw.

1890. Hy. Edw., Ento. Amer., iv, 114, *Annaphila*.

HABITAT.—Oregon.

The type is in the British Museum.

A. superba Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 139, *Annaphila*.

1882. Grt., Ill. Essay, 60, pl. III, f. 28, *Annaphila*.

HABITAT.—California.

The type is in the Edwards collection; good specimens are also in the British Museum collection.

A. divinula Grt.

1878. Grt., Bull. Geol. Surv., iv, 183, *Annaphila*.

HABITAT.—California.

The type is in the British Museum.

A. germana Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 138, *Annaphila*.

HABITAT.—California.

The type is in the Edwards collection. Mr. Edwards suggested that this might be a variety of *amicula* (*decia*), but though it resembles that species closely it seems to be distinct.

A. decia Grt.*

1875. Grt., Can. Ent., vii, 47, *Annaphila*.

amicula Hy. Edw.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 137, *Annaphila*.

1878. Grt., Bull. Geol. Surv., iv, 183, *Annaphila*.

HABITAT.—California.

Mr. Grote's type is in the British Museum; that of Mr. Edwards is in his own collection.

A. depicta Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 150, pl. iv, f. 13, *Annaphila*.

HABITAT.—California.

Types are in the British Museum and in the Edwards collection.

A. salicis Hy. Edw.1881. Hy. Edw., Papilio, I, 23, *Annaphila*.*arvalis* Hy. Edw.1875. Hy. Edw., Proc. Cal. Ac. Sci., VII, 136, *Annaphila*.1881. Hy. Edw., Papilio, I, 23, *nomen bis lectum*.**HABITAT.**—Sierra Nevada, California.

Types are in the Edwards collection, and there is also a specimen marked "type" in the British Museum.

A. lithosina Hy. Edw.1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 137, *Annaphila*.**HABITAT.**—California.

The type is in the Edwards collection. This collection by the bye contains type specimens of nearly all the species as Mr. Edwards furnished most of the material from which Mr. Grote described.

A. mera Harv.1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 277, *Annaphila*.**HABITAT.**—California.

The type is in the British Museum.

A. immerens Harv.1875. Harv., Can. Ent., VII, 160, *Annaphila***HABITAT.**—California.

The type is in the British Museum.

A. danistica Grt.*1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 151, pl. IV, f. 7, *Annaphila*.**HABITAT.**—Nevada; California.

The type is in the British Museum.

A. pustulata Hy. Edw.1881. Hy. Edw., Papilio, I, 23, *Annaphila*.**HABITAT.**—Arizona.

The type is in the Edwards collection.

A. domina Hy. Edw.1875. Hy. Edw., Proc. Col. Ac. Sci., VI, 138, *Annaphila*.**HABITAT.**—California.

The type is in the Edwards collection.

A. aurantiaca Hy. Edw.*1881. Hy. Edw., Papilio, I, 23, *Annaphila*.**HABITAT.**—California.The type is in the Edwards collection. It is not an *Annaphila*, but a *Heliothid*, for which I have not found the best place as yet. There are several small forms in collections as yet undescribed.

Genus **TRICHOTARACHE** Grt.

1875. Grt., Can. Ent., VII, 48.

T. assimilis Grt.1875. Grt., Can. Ent., VII, 48, *Trichotarache*.1883. Grt., Proc. Am. Phil. Soc., XXI, 166, *Trichotarache*.**HABITAT.**—California.

The type is in the British Museum.

Genus **ACONTIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 91.

A. flavipennis Grt1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 153, *Tarache*.**HABITAT.**—Oregon; California; Sierra Nevada.

The type is in the Edwards collection.

A. aprica Hbn.*1803. Hbn., Schmett. Eur., Noct., f. 371, *Noctua*.1816. Hbn., Verzeichniss, 261, *Tarache*.1829. Steph., Ill. Brit. Ent., Haust., III, 113, *Acontia*.1852. Gn., Spec. Gen., Noct., II, 219, *Acontia*.1857. Wlk., C. B. Mus., Het., XII, 785, *Acontia*.1868. H. Sch., Corr.-Blatt, 1868, Cuba, p. 10, *Acontia*.1874. Morr., Proc. Bost. Soc. Nat. Hist., XVII, 212, *Tarache*.1885. Gundlach, Cont. Ent. Cuba., 312, *Acontia*.var. *biplaga* Gn.*1852. Gn., Spec. Gen., Noct., II, 218, *Acontia*.1857. Wlk., C. B. Mus., Het., XII, 785, *Acontia*.

1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. var.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 36, pr. var.

HABITAT.—Southern States; Texas; Colorado; Missouri in October.

What seems to be a typical specimen, labeled by Guénée, is in the British Museum. Mr. Butler, in the *Entomologist*, xxv, 63, 1892, cites *Acontia unocula* Freyer, neuere Beitræge, VI, tab. 534, f. 3, as an additional synonym, perhaps correctly. He also, incorrectly, makes *biplaga* the female of *aprica*. Both sexes of both forms are found.

A. abdominalis Grt.1877. Grt., Can. Ent., IX, 157, *Tarache*.**HABITAT.**—Texas, March, May, and September; Kansas in May.

A type is in the British Museum, from the Grote collection; another, from the Meske collection, is in the National Museum.

A. expolita Grt.1882. Grt., Papilio, II, 131, *Tarache*.**HABITAT.**—Arizona.

The type is in the Neumœgen collection.

A. lanceolata Grt.1879. Grt., Can. Ent., xi, 198, *Tarache*.

HABITAT.—Texas.

The type is in the British Museum.

A. angustipennis Grt.*1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 426, *Tarache*.

HABITAT.—Texas in May; Colorado in August; California; New Mexico.

The type is in the British Museum.

A. sutrix Grt.1880. Grt., Can. Ent., xii, 154, *Tarache*.

HABITAT.—Colorado; Nevada; New Mexico.

A type is in the British Museum.

A. tenuicola Morr.*1874. Morr., Proc. Bost. Soc. N. H., xvii, 218, *Tarache*.

HABITAT.—Texas in April.

Types are in the Cambridge collection and with Mr. Neumøgen. The species closely approaches some forms of *candefacta*, but lacks all yellow markings.**A. erastroides** Gn.*1852. Gn., Spec. Gen., Noct., ii, 218, *Acontia*.1857. Wlk., C. B. Mus., Het., xii, 784, *Acontia*.1868. C. & R., Trans. Am. Ent. Soc., ii, 78, *Tarache*.1881. Coquillett, Papilio, i, 8, *larva*.1883. Coquillett, Papilio, iii, 84, *larva*.

HABITAT.—Canada: Eastern and Middle States, June and August.

The type is in the British Museum; others are in the Guenée collection with M. Oberthür.

A. candefacta Hbn.*1823. Hbn., Zutraege, iii, ff. 587, 588, *Tarache*.1852. Gn., Spec. Gen., Noct., ii, 216, *Acontia*.1857. Wlk., C. B. Mus., Het., xii, 784, *Acontia*.1880. Grt., Can. Ent., xii, 118, *Tarache*.1883. Coquillett, Papilio, iii, 84, *larva*.*minuta* Haw.1810. Haw., Lep. Britt., 265, *Phytometra*.

1857. Wlk., C. B. Mus., Het., xii, 784, pr. syn.

debilis Wlk.1857. Wlk., C. B. Mus., Het., xii, 786, *Acontia*.

1868. G. & R., Trans. Am. Ent. Soc., ii, 78, pr. syn.

HABITAT.—United States east of the Rocky Mountains; Colorado; Canada, May, June, and September; Kansas in July; Texas in April and August.

Walker's type is in the British Museum and is the normal form of

our common species. In citing *minuta* Haw., in the synonymy, I follow Walker without verification and merely to suggest inquiry. If the reference prove correct, Hübner's name must be superseded.

A. arizonæ* Hy. Edw.

1878. Hy. Edw., Pacific Coast Lep., No. 29, 7, *Thalpocharcs*.

1880. Grt., Can. Ent., XII, 58, *Thalpocharcs*.

1882. Grt., New List, 37, *Tarache*.

HABITAT.—Arizona; California.

The types are in the Edwards collection.

***A. sedata* Hy. Edw.**

1881. Ey. Edw., Papilio, I, 23, *Tarache*.

HABITAT.—Arizona.

The type is in the Edwards collection.

A. elegantula* Harv.

1876. Harv., Can. Ent., VIII, 55, *Thalpocharcs*.

1880. Grt., Can. Ent., XII, 58, *Thalpocharcs*.

1882. Grt., New List, 37, *Tarache*.

semiopaca Grt.

1878. Grt., Bull. Geol. Surv., IV, 182, *Tarache*.

1882. Grt., New List, 37, pr. syn.

seminivealis Hulst.

1886. Hulst, Trans. Am. Ent. Soc., XIII, 157, *Orobana*.

HABITAT.—Arizona; Nevada; Montana in June; Colorado.

Dr. Harvey's type is in the Edwards collection; Mr. Grote's type is in the British Museum, while Dr. Hulst's type is now in the Rutgers College collection.

A. binocula* Grt.

1875. Grt., Can. Ent., VII, 224, *Tarache*.

virginalis Grt.

1881. Grt., Can. Ent., XIII, 15, pr. var.

1881. Grt., Papilio, I, 155, ♀ pr. var.

HABITAT.—Arizona; Texas in May; Kansas in July.

Types of both species are in the British Museum.

A. cretata* G. & R.

1868. G. & R., Trans. Am. Ent. Soc., III, 181, pl. II, p. 78, *Tarache*.

HABITAT.—Texas in August; Colorado.

The type is in the collection of the American Entomological Society.

A. lactipennis* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 10, pl. II, f. 3, *Tarache*.

1875. Harv., Can. Ent., VII, 135, *Tarache*.

HABITAT.—Texas, April to June.

The type is in the British Museum.

A. delecta Wlk.*

1857. Wlk., C. B. Mus., Het., XII, 799, *Acontia*.
 1868. G. & R., Trans. Amer. Ent. Soc., II, 78, *Tarache*.
 1874. Morr., Proc. Bost. Soc. N. H., XVII, 212, *Tarache*.
 1888. Weeks, Ent. Amer., IV, 46, larva.
 1892. Beut., Bull. Am. Mus. N. H., IV, 68, larva.
metallica Grt.
 1865. Grt., Proc. Ent. Soc. Phil., IV, 327, pl. II, f. 7, *Acontia*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 78, pr. syn.

HABITAT.—New Jersey, southward to Florida and Texas (in May).

Walker's type is in the British Museum; that of Mr. Grote's is in the Collection of the American Entomological Society. This species is readily known by its large size and color resemblance to *Eudryas*.

A. terminimaculata Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 153, *Tarache*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 162, *Tarache*.

HABITAT.—New York; Massachusetts; Illinois in August.

The type is with Dr. Lintner.

A. ardoris Hbn.

1823. Hbn., Zuträge zur Samml. Ex. Schmett., III, 34, f. 551, 552, *Tarache*.
 1852. Gn., Spec. Gen., Noct., II, 219, *Acontia*.
 1857. Wlk., C. B. Mus., Het., XII, 758, *Acontia*.
 1880. Grt., Can. Ent., XII, 118, *Tarache*, ♀ an American.

HABITAT.—"Georgia." ?

In the Museum at Paris is a specimen from South America, identified by Guenée. The species has the maculation of *candefacta*, but is darker in color and narrower winged. I do not remember any similar specimens in American collections.

Genus **CHAMYRIS** Gn.

1852. Gn., Spec. Gen., Noct., II, 225.

C. cerintha Tr.*

1825. Tr., Schmett. Eur., V, 240, *Acontia*.
 1829. Bdv., Ind. Meth., 165, *Acontia*.
 1845. H. Sch., Schmett. Eur., II, pl. 86, f. 446, *Acontia*.
 1852. Gn., Spec. Gen., Noct., II, 225, *Chamyris*.
 1857. Wlk., C. B. Mus., Het., XII, 803, *Chamyris*.
 1874. Lint., Ent. Cont., III, 163, *Chamyris*.
 1881. Coquillett, Papilio, I, 56, larva on apple.
 1892. Edw. & Elliott, Bull. Am. Mus. N. H., IV, 78, larva.

HABITAT.—Canada; Eastern, Middle, Southern, and Central States; New York in May and July; Canada in June; Massachusetts in June and July; Kansas in May.

Erroneously described by Treitschke as a European species.

Genus **AZENIA** Grt.

1882. Grt., Papilio, II, 186.

A. implora Grt.

1882. Grt., Papilio, II, 186, *Azenia*.

1883. Grt., Proc. Am. Phil. Soc., XXI, 166, 175, *Azenia*.

1890. Grt., Ent. Amer., VI, 162, *Azenia*.

HABITAT.—Arizona.

A. edentata Grt.

1883. Grt., Can. Ent., XV, 25, *Azenia*.

1890. Grt., Ent., Amer., VI, 162, *Azenia*.

HABITAT.—Arizona.

Types of both the above species are in the Neumögen collection.

Genus **ESCARIA** Grt.

1882. Grt., Papilio, II, 186.

E. clauda Grt.*

1882. Grt., Papilio, II, 186, *Escaria*.

1890. Grt., Ent. Amer., VI, 163, *Escaria*.

HABITAT.—Arizona.

Types are in the Neumögen collection and in the National Museum.

Genus **FRUVA** Grt.

1877. Grt., Can. Ent., IX, 69.

F. fasciatella Grt.*

1875. Grt., Can. Ent., VII, 225, *Spragucia*.

1879. Grt., Can. Ent., XI, 234, *Fruva*.

obsoleta Grt.

1877. Grt., Can. Ent., IX, 69, *Fruva*.

1879. Grt., Can. Ent., XI, 235, *Fruva*.

HABITAT.—Illinois; Texas; Iowa.

The types of both names are in the British Museum, and both refer to one species. It is merely a question of completeness of maculation and not much difference at that.

F. acerba Hy. Edw.

1881. Hy. Edw., Papilio, I, 24, *Fruva*.

HABITAT.—California.

The type is in the Edwards collection.

F. modesta Hy. Edw.

1884. Hy. Edw., Papilio, IV, 124, *Fruva*.

HABITAT.—Virginia City, Nevada.

The type is in the Edwards collection.

F. apicella Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 21, *Emmelia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, *Erotyla*.

1879. Grt., Can. Ent., XI, 237, *Spragucia*.

1882. Grt., New List, 38, *Fruca*.

♀ *truncatella* Zell.

1873. Zell, Verh. k. k. zöhl. bot. Ges., XXIII, 3, t. 3, f. 1, *Agrophila*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 199, pr. syn.

♂ ♀ *accepta* Hy. Edw.

1881. Hy. Edw., Papilio, I, 24, *Fruca*.

1882. Grt., New List, 38, pr. syn.

HABITAT.—Southern States; Texas.

The Grote type is in the collection of the American Entomological Society; Mr. Edwards's types are in his collection; the Zeller type is in the Cambridge collection.

F. parvula Wlk.

1865. Wlk., C. B. Mus., Het., XXXIII, 779, *Xanthodes*.

georgica Grt.

1881. Grt., Can. Ent., XIII, 232, *Fruca*.

HABITAT.—Arizona.

Both the types are in the British Museum, and unquestionably refer to the same species. Walker's species is from "locality unknown."

F. deleta Hy. Edw.

1884. Hy. Edw., Papilio, IV, 124, *Fruca*.

HABITAT.—Virginia City, Nevada; Hudson's Bay Territory.

Types are in the Edwards and Neumægen collections.

Genus **XANTHOPTERA** Gn.

1852. Gn., Spec. Gen., Noct., II, 240.

X. nigrofimbria Gn.*

1852. Gn., Spec. Gen., Noct., II, 241, pl. 10, f. 12, *Xanthoptera*.

1857. Wlk., C. B. Mus., Het., XII, 819, *Xanthoptera*.

1879. Grt., Can. Ent., XI, 235, *Xanthoptera*.

HABITAT.—New York to Texas; Central States; Missouri and Texas in August; District of Columbia in June.

The type is probably with M. Oberthür at Rennes.

X. clausula Grt.

1882. Grt., Papilio, II, 186, *Xanthoptera*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

X. semiflava Gn.*

1852. Gn., Spec. Gen., Noct., II, 241, *Xanthoptera*.

1857. Wlk., C. B. Mus., Het., XII, 818, *Xanthoptera*.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 221, *Prothymia*.

1879. Grt., Can. Ent., XI, 235, *Xanthoptera*.

HABITAT.—Southern States; Texas.

The type is probably at Rennes with M. Oberthür; a specimen, apparently labeled by Guenée, is in the British Museum.

X. subcitrinalis Hulst.1886. Hulst, Trans. Am. Ent. Soc., XIII, 157, *Orobana*.1891. Smith, List Lepidoptera, 56, *Xanthoptera*.**HABITAT.**—Arizona.

The type is in the Rutgers College collection. From superficial characters the species belongs here. I have not tried to compare it with described forms; but it is none of those represented in the British Museum.

Genus SPRAGUEIA Grt.

1875. Grt., Check List Noctuidæ, 25.

S. on agrus Gn.*1852. Gn., Spec. Gen., Noct., II, 205, pl. x, f. 2, *Agrophila*.1857. Wlk., C. B. Mus., Het., XII, 774, *Agrophila*.1858. H. Sch. Lep. Ex., f. 209, *Agrophila*.1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, an var. *leo*; *Erotyla*.

1879. Grt., Can. Ent., XI, 232, an spec. dist.

HABITAT.—Southern States; Florida; Texas.

The type is in the Boisduval collection, now with M. Oberthür, at Rennes. In the British Museum there is a specimen apparently named by Guenée, but not the type. It is like the species labeled *on agrus* in our collections.

S. leo Gn.*1852. Gn., Spec. Gen., Noct., II, 205, *Agrophila*.1857. Wlk., C. B. Mus., Het., XII, 773, *Agrophila*.1879. Grt., Can. Ent., XI, 231, *Spragueia*.**HABITAT.**—With the preceding.

The type is also from the Boisduval collection now with M. Oberthür. In the British Museum there is a specimen apparently labeled by Guenée, and this is undoubtedly a variety of the preceding. Mr. Grote cites Herrich-Schæffer's figure of *on agrus* in error to this species; but I am not sure if he is correct. At all events further study is required to settle the matter.

S. magnifica Grt.1882. Grt., Papilio, II, 183, *Spragueia*.**HABITAT.**—Arizona.

The type is in Mr. Neumægen's collection.

S. plumbifimbriata Grt.*1877. Grt., Can. Ent., IX, 68, *Spragueia*.1879. Grt., Can. Ent., XI, 233, *Spragueia*.**HABITAT.**—Texas in April, May, and July.

The type is in the British Museum.

S. obatra Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 124, *Taracha*.1880. Grt., Can. Ent., XII, 186, *Spragueia*.**HABITAT.**—Southern States; Louisiana.

The type is in the Tepper collection.

S. dama Gn.*1852. Gn., Spec. Gen., Noct., II, 205, *Agrophila*.1857. Wlk., C. B. Mus., Het., XII, 773, *Agrophila*.1868. H. Sch., Corr. Blatt, 1868, Cuba, 1I, *Emmelia*.1879. Grt., Can. Ent., XI, 233, *Spragueia*.1885. Gundlach, Cont. Ent. Cub., 313, *Emmelia*.
trifariana Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 777, *Agrophila*.**HABITAT.**—Southern States; Florida; Texas; Cuba.

Guenée's type is with M. Oberthür. Walker's type is in the British Museum and is like the specimens named *dama* in the Grote collection. I believe Mr. Grote's identification to be correct, and therefore cite Mr. Walker's species in the synonymy; it is from "locality unknown."

S. transmutata Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 776, *Agrophila*.
pardalis Grt.1881. Grt., Papilio, I, 50, *Spragueia*.**HABITAT.**—Florida; St. Domingo.

Both the Grote and Walker types are in the British Museum, and they undoubtedly refer to the same species.

S. funeralis Grt.*1881. Grt., Papilio, I, 158, *Spragueia*.1882. Grt., Ill. Essay, 61, pl. 3, f. 30, *Spragueia*.**HABITAT.**—Arizona.

Types are in the British Museum and in the National Museum.

S. sordida Grt.*1882. Grt., Can. Ent., XIV, 217, *Spragueia*.**HABITAT.**—Texas.

The type, given me by Mr. Grote, is now in the National Museum.

S. guttata Grt.*1875. Grt., Can. Ent., VII, 224, *Spragueia*.1879. Grt., Can. Ent., XI, 234, *Spragueia*.**HABITAT.**—Texas.

The type is in the British Museum.

E. tortricina* Zell.

1872. Zell., Ver. k. k. Zoöl. bot. Ges., xxii, 461, pl. II, f. 5, *Agrophila*.

1879. Grt., Can. Ent., xi, 233, *Spragueia*.

inorata Grt.

1882. Grt., Papilio, II, 183, *Spragueia*.

1891. Smith, List Lepid., 56, pr. syn.

HABITAT.—Texas in March and May; Kansas in July.

Zeller's type is in the Museum at Cambridge; Mr. Grote's type is in the Neumögen collection. The two are the same, specifically. By an unfortunate oversight the synonymy in my list is reversed and *tortricina* stands as a synonym of *inorata* instead of *vice versa*.

Genus *EXYRA* Grt.

1875. Grt., Check List Noct., 26.

E. semicrocea* Gn.

1852. Gn., Spec. Gen., Noct., II, 241, *Xanthoptera*.

1857. Wlk., C. B. Mus., Het., XII, 818, *Xanthoptera*.

1874. Riley, Can. Ent., VI, 208, figs.; life history.

1874. Riley, Trans. St. L. Ac. Sci., III, 236, fig.; life hist.

1879. Grt., Can. Ent., XI, 236, *Exyra*.

HABITAT.—Middle, Central, and Southern States.

The name has no type, since Guenée described from a figure by Abbot, and had no autoptic acquaintance with the insect. There is no reasonable doubt however of the identification.

E. ridingsii* Riley.

1874. Riley, Trans. St. Louis Ac. Sci., III, 240, *Xanthoptera*.

1879. Grt. Can. Ent., XI, 236, *Exyra*.

nigrocaput Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 153, *Xanthoptera*.

1875. Grt., Can. Ent., VII, 17, pr. syn.

1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 211, pr. syn.

HABITAT.—Central and Southern States; Texas.

Dr. Riley's type is in the National Museum. I do not know where Mr. Morrison's type now is.

***E. fax* Grt.**

1873. Grt., Trans. Am. Ent. Soc., IV, 295, *Xanthoptera*.

1879. Grt., Can. Ent., XI, 236, *Exyra*.

HABITAT.—Southern States; Delaware in September.

I do not know where the type is at present.

E. rolandiana* Grt.

1877. Grt., Psyche, II, 38, *Exyra*.

1877. Thaxter, Psyche, II, 39, larva.

1882. Grt., Ill. Essay, 64, pl. 3, f. 35, *Exyra*.

HABITAT.—Massachusetts, May and June; Eastern, Middle, and Central States.

The type is in the British Museum.

Genus **PROTHYMIA** Hbn.

1816. Hbn., Verzeichniss, 282.

1890. Grt., Ent. Amer., vi, 163.

P. rhodarialis Wlk.*1859. Wlk., C. B. Mus., Het., xix, 860, *Herminia*.1865. Wlk., C. B. Mus., Het., xxxiv, 1204, *Marimatha*.*coccineifascia* Grt.1873. Grt., Trans. Am. Ent. Soc., iv, 294, pl. i, f. 89, *Xanthoptera*.1874. Morr., Proc. Bost. Soc. N. H., xvii, 154, *Prothymia*.1879. Grt., Can. Ent., xi, 236, *Prothymia*.1883. Grt., Proc. Am. Phil. Soc., xxi, 167, *Prothymia*.

HABITAT.—Massachusetts to Texas; Florida in March; Texas, May to August.

Both the types are in the British Museum and refer to one species only. Walker's specimens are from "locality unknown."

P. semipurpurea Wlk.*1865. Wlk., C. B. Mus., Het., xxxiii, 803, *Anthophila*.*confinisalis* Wlk.1865. Wlk., C. B. Mus., Het., xxxiv, 1206, *Marimatha*.*rosalba* Grt.1873. Grt., Trans. Am. Ent. Soc., iv, 295, pl. i, f. 88, *Xanthoptera*.1874. Morr., Proc. Bost. Soc. Nat. Hist., xvii, 154, *Prothymia*.1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 22, *Prothymia*.1879. Grt., Can. Ent., xi, 238, *Prothymia*.

HABITAT.—Massachusetts in May, to Texas in June and July; Central States.

The types are all in the British Museum, and all refer to one species. Mr. Walker's material is all from "locality unknown."

P. plana Grt.1882. Grt., Papilio, ii, 184, *Prothymia*.**HABITAT.**—Arizona.

The type is in the Neumœgen collection.

P. orgylæ Grt.*1875. Grt., Trans. Am. Ent. Soc., v, 116, *Prothymia*.1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 311, *Prothymia*.1879. Grt., Can. Ent., xi, 236, *Prothymia*.*suboliracea*, Harv.1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 11, *Prothymia*.

1879. Grt., Can. Ent., xi, 236, pr. syn.

HABITAT.—Texas in March, May, July, and September.

Both the types are in the British Museum and refer to one species only.

Genus **METATHORASA** Moore.

1881. Moore, Proc. Zool. Soc., 374.

M. argentilinea Wlk.1857. Wlk., C. B. Mus., Het., XII, 863, *Callopietria*.1882. Grt., New List, 38, *Herrichia*.1882. Grt., Papilio, II, 122, *Euherrichia*.1891. Butler, Ann. Mag. Nat. Hist., 1891, 72, *Metathorasa*.**HABITAT.**—Middle, Southern, and Central States.

The type is in the British Museum.

M. monetifera Gn.*1852. Gn., Spec. Gen., Noct., II, 295, pl. XIV, f. 4, *Eriopus*.1857. Wlk., C. B. Mus., Het., XII, 863, *Callopietria*.1882. Grt., New List, 38, *Herrichia*.1882. Grt., Papilio, II, 122, *Euherrichia*.1890. Grt., Ent. Amer., VI, 163, *Euherrichia*.1891. Butler, Ann. Mag. Nat. Hist., 1891, 73, *Metathorasa*.**HABITAT.**—Nova Scotia; Canada; Northern, Eastern, and Southern States; New York in June and July; New Jersey; Florida.

The species was described from the Saunders collection, and the type is probably at Oxford.

Genus **EUHERRICHIA** Grt.

1882. Grt., Papilio, II, 122.

1890. Grt., Ent. Amer., VI, 163.

E. mollissima Gn.*1852. Gn., Spec. Gen., Noct., II, 294, *Eriopus*.1857. Wlk., C. B. Mus., Het., XII, 863, *Callopietria*.1882. Grt., New List, 38, *Herrichia*.1882. Grt., Papilio, II, 122, *Euherrichia*.1891. Butler, Ann. Mag. Nat. Hist., 1891, 73, *Haploolophus*.
rubicunda Wlk.1857. Wlk., C. B. Mus., Het., XII, 808, *Eraetria*.

1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.

HABITAT.—Canada to Florida; Colorado, June and August.

The types of both names are in the British Museum and have been correctly united by Messrs. Grote and Robinson.

E. granitosa Gn.*1852. Gn., Spec. Gen., Noct., II, 295, *Eriopus*.1857. Wlk., C. B. Mus., Het., XII, 863, *Callopietria*.1875. Grt., Proc. Bost. Soc. N. H., XVIII, 415, *Eriopus*.1882. Grt., New List, 38, *Herrichia*.1882. Grt., Papilio, II, 122, *Euherrichia*.**HABITAT.**—Southern States; Florida.

The type is in the Boisdual collection with M. Oberthür.

E. cervina Hy. Edw.1890. Hy. Edw., Ent. Amer., VI, 114, *Herrichia*.**HABITAT.**—Mount Shasta district, California; Colorado.

Genus **CALLOPISTRIA** Hbn.

1816. Hbn., Verzeichniss, 216.

C. floridensis Gn.1852. Gn., Spec. Gen., Noct., II, 192, *Eriopus*.1857. Wlk., C. B. Mus., Het., XII, 862, *Callopietria*.1882. Grt., Papilio, II, 122, *Eukerria*.1891. Butler, Ann. Mag. Nat. Hist., 1891, 75, *Callopietria*.**HABITAT.**—Florida.

The type is in the British Museum.

C. strenua Grt.

In Ent. Amer., VI, 164, 1890, Mr. Grote speaks of this species as "described," but without saying where. I have been unable to find any description or any reference in the Record or Jahresbericht. Yet I may have overlooked it, and cite the species with the explanation and no references. The types are with Mr. Neumögen.

Genus **LITHACODIA** Hbn.

1816. Hbn., Verzeichniss, 205.

L. bellicula Hbn.*1818. Hbn., Zutraege zur Samml. Ex. Schmett., 18, f. 85, 86, *Lithacodia*.1857. Wlk., C. B. Mus., Het., XI, 583, *Hadena*.1880. Grt., Can. Ent., XII, 86, *Lithacodia*.*semichalcea* Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 797, *Hydrelia*.

1892. Butler, Entomologist, XXV, 65, pr. syn.

HABITAT.—Nova Scotia to Florida and Texas; Central States, June to August; Colorado.

Walker's type is in the British Museum and is the well-known Hübnerian species.

Genus **ERASTRIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 92.

Eustrotia Hbn., bears date the same year, but was certainly not published until 1818 at least. Mr. Grote gives an enumeration of some of the species, Ent. Amer., VI, 164, 1890.

E. malaca Grt.1873. Grt., Trans. Am. Ent. Soc., IV, 296, *Erastria*.1881. Grt., Papilio, I, 11, *Eustrotia*.**HABITAT.**—Pennsylvania.

The type is in the British Museum. It has no head, no legs, and only half a thorax. It seems a good species, however, which I had not before seen.

E. albidula Gn.*1852. Gn., Spec. Gen., Noct., II, 230, *Erastria*.1857. Wlk., C. B. Mus., Het., XII, 807, *Erastria*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, *Eustrobia*.
intractabilis Wlk.

1860. Wlk., Can. Nat. and Geol., v, 252, *Nonagria*.

1877. Grt., Can. Ent., ix, 28, pr. syn.

HABITAT.—Middle and Central States, June and July.

Guenee's type should be in the British Museum, but I did not see it there. Walker's type is in the collection of the Entomological Society of Ontario and was examined by Mr. Grote, who gives the above reference.

***E. secta* Grt.**

1879. Grt., Can. Ent., xi, 199, *Eustrobia*.

1880. Grt., Can. Ent., xii, 50, *Eustrobia*.

HABITAT.—Massachusetts.

The type is with Dr. Thaxter.

***E. flaviguttata* Grt.**

1882. Grt., Can. Ent., xiv, 187, *Eustrobia*.

HABITAT.—Texas.

Described by Mr. Grote from his own collection. The type is with Mr. Neumögen.

E. concinnimacula* Gn.

1852. Gn., Spec. Gen., Noct., II, 238, pl. x, f. 10, *Leptosia*.

1857. Wlk., C. B. Mus., Het., xii, 816, *Leptosia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 36, *Thalpochara*.

1882. Grt., New List, 37, *Eustrobia*.

var. *parvimacula* Grt.

1880. Grt., North Amer. Ent., I, 66, *Eustrobia*.

HABITAT.—Canada to Texas; west to the Rocky Mountains; Texas in March; Canada and New York, May, June, and July.

The types are in the British Museum.

E. synochites* G. & R.

1868. G. & R., Trans. Am. Ent. Soc., I, 357, *Erastria*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, *Eustrobia*.

HABITAT.—Canada in June, to Texas; Central States, May to August.

A specimen labeled *synochitis* Grt., type, is in the British Museum. In the same collection is also a specimen of the same species labeled *Erastria viridata* Wlk., but I can not find any description of such a species.

***E. olivula* Gn.**

1852. Gn., Spec. Gen., Noct., II, 231, pl. x, f. 8, *Bankia*.

1857. Wlk., C. B. Mus., Het., xii, 811, *Bankia*.

1890. Grt., Ent. Amer., vi, 164, *Eustrobia*.

HABITAT.—"North America."

The type is in M. Oberthür's collection. I am not aware that this species has been identified in American collections. It is a very dis-

tinctly marked form from the figure, and there should be no difficulty in recognizing it. Mr. Grote suggests that this may possibly be *synochitis*, but this can scarcely be so from the figure.

E. musta* G. & R.

1868. G. & R., Trans. Am. Ent. Soc., 1, 358, *Erastria*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 37, *Eustrotia*.

HABITAT.—Eastern, Middle, and Central States; Missouri in May; Texas in August.

The type is in the collection of the American Entomological Society.

E. muscosula* Gn.

1852. Gn., Spec. Gen., Noct., 11, 230, *Erastria*.

1857. Wlk., C. B. Mus., Het., 111, 807, *Erastria*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 37, *Eustrotia*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 159, *Erastria*.

HABITAT.—Eastern, Middle, and Central States; Canada and New York, June and July; District of Columbia, June and August.

The type is in the British Museum.

***E. retis* Grt.**

1879. Grt., Can. Ent., 11, 198, *Eustrotia*.

HABITAT.—Pennsylvania.

The type is in the British Museum and is rather closely related to *caduca*.

***E. distincta* Grt.**

1882. Grt., Papilio, 11, 184, *Eustrotia*.

HABITAT.—Arizona.

The type is with Mr. Neumœgen.

***E. caduca* Grt.**

1876. Grt., Can. Ent., VIII, 207, *Eustrotia*.

HABITAT.—Canada; New York; New Jersey in July.

The type is in the British Museum.

***E. propera* Grt.**

1882. Grt., Papilio, 11, 132 et 184, *Eustrotia*.

HABITAT.—Arizona.

The type is in the Neumœgen collection.

E. apicosa* Haw.

1812. Haworth, Lep. Britt., 261, *Phytometra*.

1829. Steph., Ill. Brit. Ent., Haust., 111, 119, *Erastria*.

1835. Wood, Index Ent., 74, pl. 17, f. 464, *Erastria*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., 11, 199, *Eustrotia*.

nigritula Gn.

1852. Gn., Spec. Gen., Noct., 11, 229, pl. x, f. 7, *Erastria*.

1857. Wlk., C. B. Mus., Het., 111, 807, *Erastria*.

1868. H. Sch., Corr.-Blatt, 1868, Cuba, 12, *Erastria*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, pr. syn.
 1885. Gundlach, Cont. Ent. Cüb., 315, *Erastria*.
undulifera Wlk.
 1856. Wlk., C. B. Mus., Het., IX, 258, *Miana*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 78, = *nigritula*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, pr. syn.

HABITAT.—Canada to Florida; Cuba; Central States, June to September.

The Walker and Guenée types are in the British Museum and are one species as referred by Mr. Grote.

E. carneola* Gn.

1852. Gn., Spec. Gen., Noct., II, 228, *Erastria*.
 1857. Wlk., C. B. Mus., Het., XII, 807, *Erastria*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 37, *Eustrotia*.
 1881. Coquillett, Papilio, I, 7, larva.
 1882. Coquillett, Papilio, II, 57, life history.
biplaga Wlk.
 1857. Wlk., C. B. Mus., Het., XII, 809, *Erastria*.
 1858. Wlk., C. B. Mus., Het., XIV, 1761, pr. syn.

HABITAT.—Canada; United States east of the Rocky Mountains, May to September.

The types are in the British Museum.

***E. dividua* Grt.**

1880. Grt., North Am. Ent., I, 46, *Eustrotia*.

HABITAT.—Texas.

The type is in the British Museum.

E. aeria* Grt.

1881. Grt., Papilio, I, 11, *Eustrotia*.

HABITAT.—Wisconsin; Alabama.

The type is in the British Museum.

E. includens* Wlk.

1857. Wlk., C. B. Mus., Het., XII, 813, *Hydrelia*.
norma Morr.
 1875. Morr., Can. Ent., VII, 216, *Hadena*.
 1880. Grt., Can. Ent., VII, 186, = *maria*.
penita Morr.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 71, *Lithacodia*.
 1880. Grt., Bull. Bkln. Ent. Soc., III, 39, = *norma*.
 1880. Grt., Can. Ent., XII, 186, = *maria*.
maria Grt.
 1877. Grt., Can. Ent., IX, 67, *Eustrotia*.
 1880. Grt., Bull. Bkln. Ent. Soc., III, 39, = *norma*.

HABITAT.—Nova Scotia; Canada; Eastern and Middle States.

The Walker and Grote types are in the British Museum; the type of *penita* is in the Tepper collection; that of *norma* I have not seen. Mr.

Grote persistently used his name for this species, though both of Mr. Morrison's names antedate it by two years. The Walker name will probably have enough priority to secure recognition.

Eustrotia obaurata Morr., and *Erastria pustulata* are both = *Argyrophyes nigrofasciata* Zell. The other species erroneously described as *Erastria* will be found elsewhere referred to.

Genus **THALPOCHARES** Led.

1853. Led., Verh. k. k. zoöl. bot. Ges., 1853.

1857. Lederer, Noct. Europas, 184.

T. ætheria Grt.

1879. Grt., No. Amer. Ent., I, 47, *Thalpochares*.

1880. Grt., Can. Ent., XII, 59, *Thalpochares*.

HABITAT.—Florida.

Mr. Grote's type is in the British Museum.

T. flammicincta Wlk.*

1865. Wlk., C. B. Mus., Het., XXXIII, 801, *Anthophila*.

patula Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 69, *Tarache*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Thalpochares*.

1880. Grt., Can. Ent., XII, 57, *Thalpochares*.

patruelis Grt.

1876. Grt., Can. Ent., VIII, 27, *Tarache*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 38, pr. syn.

1880. Grt., Can. Ent., XII, 57, *Thalpochares*.

1892. Butler, Entomologist, XXV, 189, *Eumestleta*.

HABITAT.—Texas, October and November; San Domingo.

Mr. Morrison's type is in the Tepper collection; Mr. Grote's is in the British Museum. Mr. Butler has made this species the type of a new genus, *Eumestleta*; with what justice, I am not prepared to say. The fact that I do not use the genus here indicates only that it was published so late that the addition referring to it was made in proof. I did not see the type of *Anthophila flammicincta* at the British Museum; but the species is so well marked that I have no hesitation in accepting Mr. Butler's determination. He suggests that the species may be Deltoid!

T. carmelita Morr.*

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 434, *Thalpochares*.

HABITAT.—Texas; Mississippi; California.

The type is in the Tepper collection.

T. mundula Zell.*

1872. Zell., Verh. k. k. zoöl. bot. Ges., XXII, 460, pl. 2, f. 4, *Thalpochares*.

HABITAT.—Texas, May and June.

The type is in the Museum at Cambridge. It is a curious species, strongly resembling *Pleonectyptera* in appearance and in maculation.

T. orba Grt.1877. Grt., Can. Ent., ix, 68, *Thalpochares*.

HABITAT.—Alabama.

The type is in the British Museum.

T. fortunata Grt.1882. Grt., Can. Ent., xiv, 171, *Thalpochares*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

T. perita Grt.1882. Grt., Can. Ent., xiv, 171, *Thalpochares*.

HABITAT.—Arizona.

A type is in the British Museum; another with Mr. Neumægen.

Genus **GALGULA** Gn.

1852. Gn., Spec. Gen., Noct., ii, 239.

G. hepara Gn.*1852. Gn., Spec. Gen., Noct., ii, 239, pl. x, f. 11, *Galgula*.1857. Wlk., C. B. Mus., Het., xii, 817, *Galgula*.*externa* Wlk.1865. Wlk., C. B. Mus., Het., xxxiii, 985, *Euclidia*.var. *partita* Gn.*1852. Gn., Spec. Gen., Noct., ii, 239, *Galgula*.1852. Gn., Spec. Gen., Noct., iii, 399, *Galgula subpartita*.1857. Wlk., C. B. Mus., Het., xii, 817, *Galgula partita*.*vesca* Morr.1875. Morr., Ann. Lyc. Nat. Hist., N. Y., xi, 103 *Telesilla*.

1876. Grt., Can. Ent., viii, 26, pr. syn.

1876. Grt., Stett. Ent. Zeit., xxxvii, 137, pr. syn.

HABITAT.—Canada, in September. United States: New York, July and August; Massachusetts, in November; Texas, in March; California, in November.

The type of *hepara* is with M. Oberthür; that of *subpartita* and *externa* are in the British Museum, while that of *vesca* is in the Tepper collection. Guenée originally used the term *partita*, but under his own rules changed it to *subpartita* in the index.

Genus **TRIPUDIA** Grt.

1877. Grt., Can. Ent., ix, 70.

T. flavofasciata Grt.1877. Grt., Can. Ent., ix, 70, *Tripudia*.*versutus* Hy. Edw.1881. Hy. Edw., Papilio, i, 116, *Oribates*.

1882. Grt., Bull. Geol. Surv., vi, 563, pr. syn.

1882. Grt., Can. Ent., xiv, 33, pr. syn.

HABITAT.—Alabama; Texas; New Mexico; Colorado.

Mr. Grote's type is in the British Museum; that of *versutus* is in the Neumægen collection.

T. quadrifera Zell.*1874. Zell., Verh. k.-k. zool. bot. Ges., xxiv, pl. xii, f. 2, *Erastria*.1877. Grt., Can. Ent., ix, 79, *Tripudia*.

HABITAT.—Mexico; Texas; Missouri.

I have not seen the type, nor do I know where it is at present. I have Zeller's paper only in the separate form, in which the description is on p. 3.

T. opipara Hy. Edw.*1881. Hy. Edw., Papilio, i, 117, *Gyros*.1882. Grt., New List, 37, *Tripudia*.

HABITAT.—Texas in May.

The type is in Mr. Graef's collection.

T. limbata Hy. Edw.*1881. Hy. Edw., Papilio, i, 22, *Oribates*.1882. Grt., New List, 37, *Tripudia*.

HABITAT.—Mazatlan, Mexico; Texas.

The type is in the Edwards collection.

T. basicinerea Grt.1882. Grt., Bull. Geol. Surv., vi, 563, *Tripudia*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

T. livida Grt.1882. Grt., Can. Ent., xiv, 173, *Tripudia*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

Genus **GYROS** Hy. Edw.

1881. Hy. Edw., Papilio, i, 117.

G. muirii Hy. Edw.1881. Hy. Edw., Papilio, i, 22, *Oribates*; id., 117, *Gyros*.

HABITAT.—California.

The type is in the Edwards collection.

Lepidomys irrenosa Gn., II, 202, pl. x, f. 1, is usually placed here, but is certainly not North American. The type is in the British Museum. M. Guenée gave New York as the locality; but nothing on the specimen itself nor in the record indicates where it really came from; it has the Doubleday label and that is all. The insect itself is very peculiar; it has a thick truncated tuft of hair at the base of primaries; the palpi like *Pleonectyptera* and altogether it has the look of a tropical species. I do not believe for an instant that it came from New York, and prefer to drop it from our lists as not of our fauna, until the contrary is proved by new specimens.

Genus **METOPONIA** Dup.
1844. Dup., Cat. Lep. Meth. Eur.

M. obtusa H. Sch.*

1853. H. Sch., Ex. Schmett., 68, f. 210, *Metoponia*.
1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 11, *Metoponia*.
obtusula Zell.
1873. Zell., Verh. k.-k. zoöl.-bot. Ges., XXIII, 204, pl. III, f. 2, *Metoponia*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 199, pr. syn.

HABITAT.—Middle and Central States; Texas in April.

Zeller's type is in the Museum of Comparative Zoölogy at Cambridge.

M. perflava Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 11, *Metoponia*.

HABITAT.—Texas in April.

The type is in the British Museum.

M. macula Smith.

1891. Smith, Trans. Am. Ent. Soc., XVIII, 132, *Metoponia*.

HABITAT.—Las Vegas, New Mexico.

Types are in the Neumögen and Hulst Collections.

Genus **HYBLÆA** Fabr.
1793. Fabr., Ent. Syst., III, 2, 127.

H. puera Cram.*

1779. Cram., Pap. Ex., II, 10, pl. 103, f. D. E., *Phalæna*.
1811. Oliv., Enc. Méth., VIII, 282, *Noctua*.
1852. Gn., Spec. Gen., Noct., II, 390, *Hyblæa*.
1857. Wlk., C. B. Mus., Het., XII, 979, *Hyblæa*.
1868. H. Sch., Corr.-Blatt, 1868, Cuba, p. 23, *Hyblæa*.
1885. Gundlach, Cont. Ent. Cub., 339, *Hyblæa*.
saga Fabr.
1787. Fabr., Mant. Insect., II, 137, *Noctua*.
1793. Fabr., Ent. Syst., III, 2, 128, *Hyblæa*.
1852. Gn., Spec. Gen., Noct., II, 390, pr. syn.
mirificum Strk.
1876. Strk., Lep. Rhop. et Het., 122, *Enigma*.
1881. Grt., Can. Ent., XIII, 16, pr. syn.
1883. Grt., Proc. Am. Phil. Soc., XXI, 169, pr. syn.

HABITAT.—Texas; Florida; West Indies.

Guenée also cites *Noctua unxia* Hbn., and *H. apicans* Bdv., as synonymous with the above species. It seems to be a common form in more tropical regions and only occasional in our own fauna.

Genus **DRASTERIA** Hbn.
1816. Hübner, Verzeichniss, 280.

D. erechtea Cram.*

1782. Cram., Pap. Ex. III, 149, pl. 275, f. E., *Phalæna*.
1816. Hbn., Verzeichniss, 281, *Drasteria*.
1852. Gn., Spec. Gen., Noct., III, 289, *Drasteria*.

1858. Wlk., C. B. Mus., Het., XIV, 1456, *Drasteria*.
 1869. Saund., Can. Ent., I, 4, larva.
 1875. Saund., Can. Ent., VII, 116, larva.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VII, 23, egg.
 1882. Pack., Papilio, II, 147, *Drasteria*.
 1884. French, Papilio, IV, 149, life history.
 1885. Riley, 4th Rept. U. S. Ent. Comm., 352, pl. 62, f. 5, all stages.
sobria Wlk.
 1857. Wlk., C. B. Mus., Het., XII, 835, *Microphysa*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 79, *Drasteria*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 389, pr. syn.
narrata Wlk.
 1858. Wlk., C. B. Mus., Het., XIV, 1474, *Poaphila*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 38, pr. syn.
patibilis Wlk.
 1858. Wlk., C. B. Mus., Het., XIV, 1471, *Poaphila*.
agricola G. & R.
 1868. G. & R., Trans. Am. Ent. Soc., I, 189, pl. IV, f. 34, *Drasteria*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 38, pr. syn.
♀ mundula G. & R.
 1868. G. & R., Trans. Am. Ent. Soc., I, 191, pl. IV, f. 35, *Drasteria*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 155, *Drasteria*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 38, pr. syn.

HABITAT.—Eastern United States to Colorado; New Mexico; British Columbia; Canada. Found at almost all times from April to October.

D. crassiuscula* Haw.

1810. Haw., Lep. Britt., 259, *Phytometra*.
 1829. Steph., Ill. Brit. Ent., Haust., III, 126, ♀ *Ophiusa*.
 1833. Wood, Index Ent., pl. 17, f. 436, *Ophiusa*.
 1858. Wlk., C. B. Mus., Het., XIV, 1456, = *erechtea*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 199, = *erechtea*.
erichto Gn.
 1852. Gn., Spec. Gen., Noct., III, 290, *Drasteria*.
 1858. Wlk., C. B. Mus., Het., XIV, 1457, *Drasteria*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 154; an var. *erechtea*.
 var. *ochrea* Grt.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 155, an var. *erechtea*.
 var. *distincta* Neum.
 1883. Neum., Papilio, III, 143, *Drasteria*.

HABITAT.—With the preceding.

The synonymy given above is the result of a very clever study of the genus by Mr. M. V. Slingerland, who demonstrated that the two species were usually confused in collections, and identified all the names with the proper species. Walker's types are in the British Museum, and all his specimens are, I believe, of the *erechtea* form. *P. amplissima* Wlk., which had also been referred here is really *Parallelia bistriaris*; on the other hand *Poaphila patibilis* Wlk., undoubtedly belongs here. *Phalæna spadix* Cram., has been referred by Mr. Grote as the female of *erechtea*, and Walker made the figure the type and only species of his genus *Cissusa*, without ever having seen an example. Mr. Slingerland called my attention to the fact that the figure could scarcely be meant

for *erechtea*. An examination of Cramer's work proved that he was correct, and that the figure referred to the form named *Taniocampa regeta* by Mr. Morrison. A very closely allied form has been described in *Synedoida* by Mr. Grote, and it is not improbable that Mr. Edwards' genus may have to give place to Walker's *Oissusa*.

Mr. Slingerland's work has not yet appeared at date of writing, hence could not be specifically referred to.

D. cærulea Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 155, *Drasteria*.

aquamarina Feld.

1874. Feld., Reise der Nov., Zoöl., II, pt. 2, pl. 117, f. 10, *Euclidia*.

1875. Feld., loc. cit., addenda, = *plumbcola* Grt.

HABITAT.—California.

Mr. Grote's type is in the British Museum. Felder's plates bear date in 1873, but were not issued until late in 1874. He makes a curious error in referring his species to the synonymy, using the name *plumbcola* Grt., and correctly referring to the description of *cærulea*.

Genus **CÆNURGIA** Wlk.

1858. Wlk., C. B. Mus., Het., xiv, 1491.

C. convalescens Gn.*

1852. Gn., Spec. Gen., Noct., III, 289, *Drasteria*.

1858. Wlk., C. B. Mus., Het., xiv, 1456, *Drasteria*.

1869. H. Sch., Corr. Blatt, 1869, Cuba, 26, *Drasteria*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 154, *Drasteria*.

1875. Grt., Can. Ent., VII, 49, *Litosea*.

1885. Gundlach, Cont. Ent. Cuba., 350, *Drasteria*.
socors Wlk.

1858. Wlk., C. B. Mus., Het., xiv, 1492, *Cænurgia*.
purgata Wlk.

1858. Wlk., C. B. Mus., Het., xiv, 1491, *Cænurgia*.

HABITAT.—Canada to Florida; Central States. Walker's types are in the British Museum. Guenée had several specimens before him when he described; but whether the British Museum specimens were of the types I cannot find. Mr. Walker's genus has priority over *Litosea*.

C. adversa Grt.*

1875. Grt., Can. Ent. VII, 49, *Litosea*.

HABITAT.—California.

The type is in the British Museum.

Genus **HYPOCALA** Gn.

1852. Gn., Spec. Gen., Noct., III, 73.

H. hillii Lint.*

1878. Lint., Ent. Cont., IV, 103, *Hypocala*.

HABITAT.—New York, October; Texas, September; Florida in June. The type is in the Hill collection; a second specimen, before the author when he wrote, is in the National Museum.

Genus **EUCLIDIA** Ochs.

1816. Ochs., Schmett. Eur., IV, 96.

E. cuspidata Hbn.1818. Hbn., Zuträge, I, 16, ff. 69-70, *Drasteria*.1816. Hbn., Verzeichnisse, 280, *Drasteria*.1852. Gn., Spec. Gen., Noct., III, 292, *Euclidia*.1857. Wlk., C. B. Mns., Het., XIV, 1460, *Euclidia*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 154, *Euclidia*.1880. Grt., Can. Ent., XII, 86, *Euclidia*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States, May to August.

E. intercalaris Grt.1882. Grt., Bull. Geol. Surv., VI, 563, *Euclidia*.**HABITAT.**—New Mexico.

I have seen the type, which was described from Prof. Snow's collection, in the British Museum.

E. annexa Hy. Edw.1890. Hy. Edw., Ento. Amer., VI, 115, *Euclidia*.**HABITAT.**—Rouge River, Oregon.

The types are in the British Museum.

Genus **GRAMMODES** Gn.

1852. Gn., Spec. Gen., Noct., III, 275.

G. smithii Gn.1852. Gn., Spec. Gen., Noct., III, 266, pl. XXII, f. 4, *Ophiusa*.1858. Wlk., C. B. Mns., Het., XIV, 1420, *Ophiusa*.1882. Grt., New List, 39, *Grammodes*.**HABITAT.**—Southern States.**G. similis** Bdv.1852. Gn., Spec. Gen., Noct., III, 267, *Ophiusa*.1858. Wlk., C. B. Mns., Het., XIV, 1420, *Ophiusa*.1882. Grt., New List, 39, *Grammodes*.var *apicalis* Bdv.

1852. Gn., Spec. Gen., Noct., III, 267, pr. var.

HABITAT.—Georgia; Southern States.**G. consobrina** Gn.1852. Gn., Spec. Gen., Noct., III, 268, *Ophiusa*.1857. Wlk., C. B. Mns., Het., XIV, 1420, *Ophiusa*.1882. Grt., New List, 39, *Grammodes*.**HABITAT.**—Southern States.

The types of all these species are with M. Oberthür. The *Ophiusa similis* Wlk.,—whether of Boisduval I cannot say—is rather a *Poaphila* and is new to me. No specimens of it were in the Grote collection. I do not know the type of *Grammodes* and can not say whether the American species are correctly referred. Guenée considered neither of them referable to his genus.

Genus **PANULA** Gn.

1852. Gn., Spec. Gen., Hct., III, 59.

P. inconstans Gn.*1852. Gn., Spec. Gen., Noct., III, 59, pl. XIII, f. 9, *Panula*.1857. Wlk., C. B. Mus., Hct., XIII, 1144, *Panula*.**HABITAT.**—Southern States; Texas.

A type is in the British Museum. Guenée describes it from "Coll. div.," and had a number of specimens, showing quite a range of variation, before him.

P. remigipila Gn.1852. Gn., Spec. Gen., Noct., III, 60, *Panula*.1857. Wlk., C. B. Mus., Hct., XIII, 1144, *Panula*.**HABITAT.**—East Florida.

The type is in the British Museum. It is rather a curious species, of the uniform *Taniocampa* red-brown; but with the typical *Synedoid* median lines pale marked. It strongly resembles some of the species of *Synedoida*. *Taniocampa vegeta* Morr., must be compared with this species, and here also *Cissusa spadix* must be referred to as probably congeneric.

Genus **CISSUSA** Wlk.

1856. Wlk., C. B. Mus., Hct., IX, 153.

C. spadix Cram.1780. Cram., Pap. Exot., III, 149, pl. 275, f. F, *Phalæna*.1856. Wlk., C. B. Mus., Hct., IX, 153, *Cissusa*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 155, = *D. erectica*.
vegeta Morr.1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 432, *Taniocampa*.**HABITAT.**—Texas; Southwestern United States.

I have already spoken of this species, which has been long overlooked, and which has been almost certainly described at least twice more than I have indicated. *Cissusa* was described from Cramer's picture of the species; but may have to replace *Synedoida*.

Genus **SYNEDOIDA** Hy. Edw.

1878. Hy. Edw., Proc. Cal. Ac. Sci., Pacific Coast Lep., No. 29, 9.

The above paper was published as a separate only. The species of this genus are ill associated, and there are too many of them. Mr. Edwards had himself intended to unite some of the forms, as larger material proved them identical.

S. cervina Hy. Edw.1882. Hy. Edw., Papilio, II, 129, *Synedoida*.**HABITAT.**—Arizona.

The type is in the Neumægen collection.

S. inepta Hy. Edw.*1881. Hy. Edw., Papilio, 1, 27, *Synedoida*.*morbosa* Hy. Edw.1881. Hy. Edw., Papilio, 1, 27, *Synedoida*.**HABITAT.**—Colorado.

Types of both forms are in the Neumægen collection. Mr. Edwards has admitted the identity of the two for some time.

S. biformata Hy. Edw.*1878. Hy. Edw., Pacific Coast Lep., No. 29, 9, *Synedoida*.**HABITAT.**—California.

The types are in the Edwards collection.

S. scrupulosa Hy. Edw.1878. Hy. Edw., Pacific Coast Lep., No. 29, 9, *Synedoida*.**HABITAT.**—California; Colorado.

The types are in the Edwards and Neumægen collections.

S. insperata Grt.1882. Grt., Can. Ent., xiv, 176, *Synedoida*.**HABITAT.**—Arizona.

This type is in the Neumægen collection.

S. mucronata Grt.1883. Grt., Can. Ent., xv, 121, *Synedoida*.**HABITAT.**—Arizona.

The type is with Mr. Neumægen.

S. ægrotata Hy. Edw.1884. Hy. Edw., Papilio, iv, 47, *Synedoida*.**HABITAT.**—Arizona.

The types are with Mr. Neumægen. Mr. Neumægen thinks it is the female of *Melipotis perlata* Edw.

S. valens Hy. Edw.*1881. Hy. Edw., Papilio, i, 119, *Synedoida*.**HABITAT.**—Utah; Colorado in September.

The type is with Mr. Neumægen.

S. sabulosa Hy. Edw.1881. Hy. Edw., Papilio, i, 26, *Synedoida*.1882. Grt., Ill. Essay, 66, pl. iv, f., 39, *Synedoida*.**HABITAT.**—Colorado.

The types are in the Neumægen collection.

Genus **LITOCALA** Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 3.

L. sexsignata Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 280, *Lita*.1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 3, *Litocala*.var *deserta* Hy. Edw.

1881. Hy. Edw., Papilio, I, 25, pr. var.

HABITAT.—Nevada; Colorado; Arizona; New Mexico; California in June.

The type of Dr. Harvey's species is in the British Museum; that of *deserta* is in the Edwards collection.

Genus **SYNEDA** Gn.

1852. Gn., Spec. Gen., Noct., III, 71.

With this genus begins a series of forms similar in appearance and habitus, and leading to *Catocala*. There are numerous species described, and very few collections have more than a fair percentage of them. In some of the genera the range of variation is very great, and it is very probable that there will be a very large reduction in the number of species when they are once well known. In many cases the sexes are extremely dissimilar and have been described as separate species.

S. athabasca Neum.1883. Neum., Papilio, III, 143, *Syneda*.**HABITAT.**—British Columbia.

This type is in Mr. Neumægen's collection.

S. hudsonica G. & R.1865. G. & R., Proc. Ent. Soc. Phil., IV, 494, pl. III, f. 7 and 8, *Syneda*.1869. Bethune, Can. Ent., I, 87, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.1883. Grt., Can. Ent., XV, 5, *Syneda*.**HABITAT.**—Hudson Bay Territory; Canada; Montana.

I have not seen the type, nor do I know where it is to be found at present.

S. graphica Hbn.*1818. Hbn., Zutræge, I, 8, f. 11, 12, *Drasteria*.1852. Gn., Spec. Gen., Noct., III, 71, *Syneda*.1857. Wlk., C. B. Mus., Het., XIII, 1162, *Syneda*.1865. G. & R., Proc. Ent. Soc. Phil., IV, 495, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.1880. Grt., Can. Ent., XII, 85, *Syneda*.var. *capticola* Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1461, *Euclidia*.1882. Grt., New List, 39, *Syneda*.var. *media* Morr.

1875. Morr., Proc. Bost. Soc. N. H., XVIII, 125, pr. var.

HABITAT.—New York; New Jersey, in May; southward to Florida,

Walker's species is in the British Museum; Mr. Morrison's type is in the Meyer collection. Walker's type is quite the typical form of what is known in our collections as *graphica*.

S. divergens* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 27, *Syneda*.

HABITAT.—California; Colorado.——

The type is probably with Dr. Behr.

***S. petricola* Wlk.**

1858. Wlk., C. B. Mus., Het., XIV, 1462, *Euclidia*.

1882. Grt., New List, 39, *Syneda*.

HABITAT.—Rocky Mountains.

The type is in the British Museum. It is a small species near *adumbrata* Behr, and is not in the Grote collection. It seems a good species, and is, at all events, new to me.

S. alleni* Grt.

1877. Grt., Can. Ent., IX, 215, *Syneda*.

1878. Grt., Bull. Geol. Surv., IV, 183, *Syneda*.

saxea Hy. Edw.

1881. Hy. Edw., Papilio, I, 26, *Syneda adumbrata* var.

1882. Grt., New List, 39, pr. syn.

HABITAT.—Canada, in June and July; Maine; Nevada; Colorado.

Mr. Grote's type is in the British Museum; the type of *saxea* is in the Edwards collection.

S. adumbrata* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 27, *Syneda*.

1875. Grt., Can. Ent., VII, 70, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.

HABITAT.—California, in July; Nevada; Washington; Arizona; Colorado; Utah, in June.

I have not seen the type, which is probably in Dr. Behr's own collection.

***S. occulta* Hy. Edw.**

1881. Hy. Edw., Papilio, I, 118, *Syneda*.

HABITAT.—Texas.

The type is with Mr. Neumægen.

S. seposita* Hy. Edw.

1881. Hy. Edw., Papilio, I, 25, *Syneda*.

HABITAT.—Colorado; Utah.

The type is in the Neumægen collection.

S. socia* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 27, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.

HABITAT.—California in July; Arizona; Colorado in August.

I have not seen the type, which is probably with Dr. Behr.

S. ochracea Behr.1870. Behr, Trans. Am. Ent. Soc., III, 25, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.**HABITAT.**—California.

I have not seen the type. It is probably with Dr. Behr.

S. mirifica Hy. Edw.1878. Hy. Edw., Pacific Coast Lep., No. 29, 8, *Syneda*.**HABITAT.**—Nevada.

The type is in the Edwards collection.

S. tejonica Behr.1870. Behr, Trans. Am. Ent. Soc., III, 26, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.**HABITAT.**—California; Colorado.

The type is probably with Dr. Behr. I have not seen it.

S. nubicola Behr.1870. Behr, Trans. Am. Ent. Soc., III, 25, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.**HABITAT.**—California.

Dr. Behr has the type, I believe.

S. maculosa Behr.1876. Behr, Trans. Am. Ent. Soc., III, 26, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.**HABITAT.**—California.

The type is probably in Dr. Behr's collection.

S. hastingsii Hy. Edw.1878. Hy. Edw., Pacific Coast Lep., No. 29, 8, *Syneda*.
var. *perpallida* Hy. Edw.1881. Hy. Edw., Papilio, I, 25, *Syneda*.**HABITAT.**—Oregon; California.

The types are in the Edwards collection.

S. faceta Hy. Edw.1881. Hy. Edw., Papilio, I, 119, *Syneda*.**HABITAT.**—Florida.

The type is in the Edwards collection.

S. howlandii Grt.*1864. Grt., Proc. Ent. Soc. Phil., III, 533, pl. 6, f. 7, *Syneda*.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 154, *Syneda*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.
stretchii Behr.1870. Behr, Trans. Am. Ent. Soc., III, 27, *Syneda*.

1875. Grt., Can. Ent., VII, 70, pr. syn.

HABITAT.—California; Arizona; Colorado in September; Nevada.

The type of Mr. Grote's species should be in the collection of the American Entomological Society; but I have not found it there.

***S. perplexa* Hy. Edw.**

1884. Hy. Edw., Papilio, iv, 47, *Syneda*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

S. ingeniculata* Morr.

1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 435, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

HABITAT.—Texas.

The type is in the Museum of Comparative Zoölogy at Cambridge and resembles *graphica* in a general way, but with less contrast of color and shade.

S. edwarda* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 28, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

HABITAT.—California.

The type is probably in Dr. Behr's hands.

Genus *CIRRHO BOLINA* Grt.

1875. Grt., Trans. Am. Ent. Soc., v, 117.

C. deducta* Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 220, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 38, *Cirrhobolina*.

♀ *pavitensis* Morr.

1874. Morr., Proc. Bost. Soc. N. H., xvii, 221, *Syneda*.

1875. Grt., Trans. Am. Ent. Soc., v, 117, pr. syn.

HABITAT.—Texas in April, May, June, July, August.

The types are in the Museum of Comparative Zoölogy at Cambridge and have been correctly referred as sexes of the same species. A duplicate type of *pavitensis* is in the Tepper collection.

C. mexicana* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 27, *Syneda*.

1882. Grt., New List, 39, *Cirrhobolina*.

incandescens Grt.

1875. Grt., Trans. Am. Ent. Soc., v, 117, *Cirrhobolina*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, an var. *deducta*.

1880. Grt., Bull. Bkln. Ent. Soc., III, 38, an var. *deducta*.

1882. Grt., New List, 39, pr. syn.

var. *vulpina* Hy. Edw.

1882. Hy. Edw., Papilio, II, 14, pr. var.

HABITAT.—New Mexico; Arizona; Colorado; Texas in August and November.

I have seen none of the types. That of Mr. Edwards' variety is in the Neumögen collection. Dr. Behr's specimen is probably in his own collection.

C. perfecta Hy. Edw.

1884. Hy. Edw., Papilio, IV, 46, *Syneda*.

1891. Smith, List Lepidoptera, 58, *Cirrhopolina*.

HABITAT.—Arizona.

The type is in the Neumögen collection.

C. tetrica Hy. Edw.

1878. Hy. Edw., Pacific Coast, Lep., No. 29, 10, *Cirrhopolina*.

HABITAT.—California.

Types are in the Edwards and Behr collections.

Genus **MELIPOTIS** Hbn.

1816. Hübner, Verzeichniss, 260.

M. fasciolaris Hbn.*

1823. Hbn., Zutræge, III, 15, ff. 443, 444, *Aedia*.

1852. Gn., Spec. Gen., Noct., III, 69, *Bolina*.

1857. Wlk., C. B. Mus., Het., XIII, 1147, *Bolina*.

1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanilla*.

1880. Grt., Can. Ent., XII, 118, *Melipotis*.

1888. Moeschl., Ent., Amer., III, 198, *Bolina*.

fasciolaris Gn.—in part.

1852. Gn., Spec. Gen., Noct., III, 63, *Bolina*.

1857. Wlk., C. B. Mus., Het., XIII, 1147, pr. syn.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 220, pr. syn.

1888. Moeschl., Ento. Amer., III, 198, = *fasciolaris* in part.

♀ *cunearis* Gn.

1857. Gn., Spec. Gen., Noct., III, 70, *Bolina*.

1888. Moeschl., Ento. Amer., III, 198, pr. syn.

1888. Butler, Ento. Amer., IV, 13, pr. syn.

HABITAT.—West Indies; ? Gulf States.

Mr. Moeschler's paper, above cited, should be referred to for the rather involved synonymy of the species, grounded in a very curious error made by Guenée. It is at least questionable whether the true *fasciolaris* occurs with us. Mr. Moeschler thought it did not, and I have not seen any such specimens as he sent me, from our territory.

M. nigrescens G. & R.*

1866. G. & R., Proc. Ent. Soc. Phil., VI, 20, pl. III, f. 4, *Aedia*.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 220, = *fasciolaris*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 12, *Bolina*, an sp. dist.

1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.

1878. Grt., Bull. Geol. Surv., IV, 184, an sp. dist. *fasciolaris*.

1883. Grt., Can. Ent., XV, 5, *Melipotis*.

♂ *ochreipennis* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 12, *Bolina*.

1875. Grt., Trans. Am. Ent. Soc., V, 117, *Bolina*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 4, pr. var.

1878. Grt., Bull. Geol. Surv., iv, 184, = ♂ prec.

1888. Grt., Can. Ent., xx, 139, = ♂ prec.

1888. Moeschl., Ent. Amer., iii, 197, *Bolina*.
fascicularis Gn.—partim.

1852. Gn., Spec. Gen., Noct., iii, 63, *Bolina*.

1888. Moeschl., Ent. Amer., iii, 197, pr. syn.

HABITAT.—Texas in April, May, and November; Colorado; Delaware in June.

The Grote and Robinson type I have not seen; but have seen specimens named by Mr. Grote. Dr. Harvey's type is in the British Museum from the Grote collection. There is no reasonable doubt that Dr. Harvey described only the normal male form.

M. hadeniformis Behr.

1870. Behr, Trans. Am. Ent. Soc., iii, 25, *Syneda*.

1875. Grt., Check List, Noct., 40, *Melipotis*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

HABITAT.—California.

The type is probably with Dr. Behr.

M. pallescens G. & R.*

1866. G. & R., Proc. Ent. Soc. Phil., vi, 21, pl. 3, f. 5, *Aedia*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 13, *Bolina*.

1876. Grote, List Noctuidæ, 40, *Melipotis*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

HABITAT.—Texas in April and June; Colorado in August.

I have not seen the type; but there are specimens labeled by Mr. Grote in the British Museum.

M. perlæta Hy. Edw.

1882. Hy. Edw., Papilio, ii, 14, *Melipotis*.

HABITAT.—Arizona.

The type is in the Neumoegen collection. See *Synedoida ægrotata* for a note on this species.

M. limbolaris Geyer.*

1825. Geyer, Zutræge, iv, ff. 689, 690, *Aedia*.

1852. Gn., Spec. Gen., Noct., iii, 71, *Syneda*.

1857. Wlk., C. B. Mus., Het., xiii, 1168, *Syneda*. *

1864. G. & R., Proc. Ent. Soc. Phil., iv, 494, *Syneda*.

1878. Graef, Bull. Bkln. Ent. Soc., i, 54, *Leucanitis*.

1881. Grt., Can. Ent., xiii, 91, *Melipotis*.

grandirena Haw.

1810. Haw., Lep. Britt., 264, *Phylometra*.

1829. Steph., Ill. Brit. Ent., Haust., iii, 126, Note, † *Ophiusa*.

1858. Wlk., C. B. Mus., Het., xiv, 1442, *Grammodes*.

1878. Butler, Proc. Zool. Soc. Lond., 1878, 487, pr. syn.

HABITAT.—New Hampshire; Massachusetts; New York in July, to Florida; Wisconsin.

M. tenella Hy. Edw.1881 Hy. Edw., Papilio, I, 26, *Melipotis*.

HABITAT.—Texas.

The type is in the Neunœgen collection.

M. stygialis Grt.1878. Grt., Bull. Geol. Surv., IV, 184, *Melipotis*.1883. Grt., Can. Ent., XV, 5, *Melipotis*.

HABITAT.—Illinois; Texas.

The British Museum specimen is not the type, the location of which I do not know.

M. versabilis Harv.1877. Harv., Can. Ent., IX, 94, *Melipotis* var. *jucunda*.1880. Grt., Can. Ent., XII, 86, var. *jucunda*.

1883. Grt., Can. Ent., XV, 6, an sp. dist.

HABITAT.—Texas.

The type I have not seen, nor can I say where it is at present.

M. jucunda Hbn.*1818. Hbn., Zutraege, I, 17 ff. 81, 82, *Melipotis*.1816. Hbn., Verzeichniss, 280, *Melipotis*.1857. Wlk., C. B. Mus., Het., XIII, 1145, *Bolina*.1870. Behr, Trans. Am. Ent. Soc., III, 25, *Bolina*.1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 280, *Bolina*.1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 13, *Bolina*.1878. Graef, Bull. Bkln. Ent. Soc., I, 54, *Leucanitis*.1880. Grt., Can. Ent., XII, 86, *Melipotis*.*cinis* Gn.1852. Gn., Spec. Gen., Noct., III, 62, *Bolina*.

1857. Wlk., C. B. Mus., Het., XIII, 1145, pr. syn.

agrotipennis Harv.1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 280, *Bolina*.

HABITAT.—New York to Texas and Florida; Colorado in June; Texas in July and September.

Dr. Harvey's type is in the British Museum. *Agrotipennis* is a very dark form of *jucunda*. The characters pointed out by Dr. Harvey prove evanescent on examination of a good series.**M. sinualis** Harv.*1877. Harv., Can. Ent., IX, 94, *Melipotis*.

HABITAT.—Texas in May and September.

The type is in the British Museum.

Genus **HYPOGRAMMA** Gn.

1852. Gn., Spec. Gen., Noct., III, 34.

H. andromedæ Gn.1852. Gn., Spec. Gen., Noct., III, 84, *Hypogramma*.1857. Wlk., C. B. Mus., Het., XIII, 1095, *Hypogramma*.

HABITAT.—Georgia.

The species was described from a design by Abbot and has no type. So far as I am aware it has not been identified. Its recognition will be possible from the life history.

Genus **MAGUSA** Wlk.

1857. Wlk., C. B. Mus., Het., xi, 762.

M. divaricata Grt.*

1874. Grt., Sixth Rept. Peab. Ac. Sci., 37, *Stictoptera*.

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 281, *Stictoptera*.

HABITAT.—Wisconsin; New York; Florida; Texas in December.

The type is in the British Museum. The species belongs to *Magusa* rather than *Stictoptera*, and is very close to the *Magusa dissidens* Feld. and Rog., if not indeed the same. The latter species is in the Berliner Museum, in which I had a chance to compare typical *Stictoptera*. Moeschler has described a very closely allied species from the West Indies as a *Laphygma*.

Genus **CATOCALA** Schrank.

1802. Schrank, Fauna Boica, II, 2, 158.

In this genus I have made no original studies and no comparisons. The species have been great favorites with collectors, and much has been written concerning their habits and variations. Mr. Grote and Mr. Hy. Edwards have devoted special attention to the genus; and, lastly, Dr. Hulst has given a monographic revision in the Bulletin of the Brooklyn Entomological Society, VII, pp. 15–56, 1884, in which the species are separated on structural peculiarities. This revision is followed here in essentials, and must be consulted in any study of the genus. The departures from the order given in the publication cited are all such as Dr. Hulst has himself suggested in the check list of Lepidoptera edited by me. I have not kept up my references as carefully in this genus as in some others, but I do not think I have omitted anything really important. A great many mere notes of captures and of habits are not referred to, though interesting in themselves and valuable to the student of geographical distribution. I did not examine the British Museum series, and therefore am not to be considered as indorsing the correctness of any synonymy given. My notes concerning the location of type specimens are meager, but there are few genera in which the literature is so good and the reference to actual types so seldom necessary. Most of the Hulst types are in the Rutgers College collection. Mr. Grote and Mr. Edwards have both examined the British Museum collection, and their references are probably accurate.

§ EUPARTHENOS Grt.

1876. Grt., Ann. Lyc. Nat. Hist. N. Y., xi, 301.

C. nubilis Hbn.*1816. Hbn., Samml. Ex. Schmett., II, pl. 428, f. 3, *Parthenos*.1816. Hbn., Verzeichniss, 278, *Parthenos*.1852. Gn., Spec. Gen., Noct., III, 80, *Parthenos*.1857. Wlk., C. B. Mus., Het., XIII, 1179, *Parthenos*.1869. Bethune, Can. Ent., I, 88, *Parthenos*.1876. Grt., Ann. Lyc. Nat. Hist., N. Y., xi, 301, *Euparthenos*.1877. Andrews, Can. Ent., IX, 20, *Catocalirrhus*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 33, *Catocalirrhus*.

HABITAT.—Canada in July; United States east of the Rocky Mountains; Colorado; Massachusetts in June; New York in July.

§ CATOCALA Schrank.

C. elonympha Hbn.*1818. Hbn., Zuträge, I, 11, f. 29, 30, *Ephesia*.1816. Hbn., Verzeichniss, 280, *Allotria*.1852. Gn., Spec. Gen., Noct., III, 37, pl. 15, f. 11, *Allotria*.1857. Wlk., C. B. Mus., Het., XIII, 1216, *Allotria*.1880. Grt., Can. Ent., XII, 85, *Allotria*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 24, 29, 33, *Catocala amica* † Wlk.1857. Wlk., C. B. Mus., Het., XIII, 1207, *Catocala*.

1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.

HABITAT.—Canada; Middle and Southern States; District of Columbia in August.

C. messalina Gn.*1852. Gn., Spec. Gen., Noct., III, 107, *Catocala*.1857. Wlk., C. B. Mus., Het., XIII, 1209, *Catocala*.1872. Grt., Trans. Am. Ent. Soc., IV, 19, *Catocala*.1876. Harv., Can. Ent., VIII, 7, † a *belfragiana*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 34, *Catocala belfragiana* Harv.1874. Harv., Bull. Buff. Soc. Nat. Sci., II, 28, *Catocala*.1876. Harv., Can. Ent., VIII, 7, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 6, pr. syn.

1882. Grt., New List, 41, *Andrewsia*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 34, pr. syn. *jocasta* Strk.1875. Strk., Lep. Rhop. et Het., 107, *Catocala*.

1876. Harv., Can. Ent., VIII, 7, pr. syn.

HABITAT.—Kansas to Texas in May.

Dr. Hulst states, from information, that Guenée's type is no longer in existence. Dr. Harvey's type is in the British Museum; Dr. Strecker's in his own collection.

C. amica Hbn.*1818. Hbn., Zuträge, I, 14, f. 27, 28, *Ephesia*.1816. Hbn., Verzeichniss, 279, *Corisce*.1857. Wlk., C. B. Mus., Het., XIII, 1208, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 18, sub nom. *androphila*.
 1881. Coquillett, Papilio, I, 7, larva.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 34, *Catocala*.
androphila Gn.
 1852. Gn., Spec. Gen., Noct., III, 106, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1208, pr. syn.
 var. *lineella* Grt.*
 1872. Grt., Trans. Am. Ent. Soc., IV, 18, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 6, pr. syn.
 1882. Grt., Papilio, II, 9, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 34, pr. syn.
 1892. Butler, Entomologist, XXV, 214, pr. syn.
 var. *nerissa* Hy. Ed.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 61, pr. var.
 1882. Grt., Papilio, II, 9, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 34, *Catocala*.

HABITAT.—Massachusetts in July and August; New York to Texas in June; Illinois; Central States.

The types of *nerissa* are in the Neumægen and Edwards collections.

C. gracilis Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 511, *Catocala*.
 1877. Grt., Can. Ent., IX, 169, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 35, *Catocala*.
similis Grt.
 1872. Grt., Trans. Am. Ent. Soc., IV, 9, 17, *Catocala*.
 1877. Grt., Can. Ent., IX, 170, pr. syn.
 var. *sordida* Grt.
 1877. Grt., Can. Ent., IX, 170, pr. var.
 1882. Grt., Papilio, II, 9, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 35, *Catocala*.

HABITAT.—Canada in August; New York in July; Middle and Southern States.

C. minuta Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 512, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 17, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, *Catocala*.
 var. *parvula* Edw.
 1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 512, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 17, pr. syn.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 35, pr. var.
 var. *mellitula* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 35, pr. var.

HABITAT.—Eastern and Middle States.

Dr. Hulst's type is in the Rutgers College collection.

C. olivia Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., II, 95, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 35, *Catocala*.

HABITAT.—Texas.

The type is in the Neumægen collection.

C. grynea Cram.*

1782. Cram., Pap. Ex., III, 29, pl. 208, f. H., *Phalæna*.
 1811. Oliv., Enc. Meth., VIII, 291, *Noctua grynea*.
 1816. Hbn., Verzeichniss, 278, *Ephesia*.
 1857. Wlk., C. B. Mus., Het., XIII, 1205, *Catocala*.
 1881. Grt., Can. Ent., XIII, 35, aberration.
 1881. Kœbele, Bull. Bkln. Ent. Soc., IV, 22, larva.
 1884. Bean, Can. Ent., XVI, 67, larva.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 35, *Catocala*.
polygama Gn. nec. Grt.
 1852. Gn., Spec. Gen., Noct., III, 105, pl. 16, f. 2, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1207, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 36, pr. syn.
nuptula Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1205, *Catocala*.
 1838. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
 var. *alabama* Grt.
 1875. Grt., Proc. Ac. Nat. Sci. Phil., 1875, 427, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 6, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 36, pr. var.
 ab. *constans* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, aberr. pr.

HABITAT.—Atlantic and Central States; Massachusetts in July and August.

C. præclara G. & R.*

1866. G. & R., Proc. Ent. Soc. Phil., VI, 25, pl. IV, f. 4, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 17, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, var. *grynea*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 36, an sp. dist.

HABITAT.—Canada in August; New York in July; Eastern States July and August.

C. micronympha Gn.*

1852. Gn., Spec. Gen., Noct., III, 102, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1204, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 15, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, *Catocala*.
fratercula G. & R.
 1866. G. & R., Proc. Ent. Soc. Phil., VI, 24, pl. IV, f. 3, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 17, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 37, pl. V, f. 8, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. syn.
 1891. Grt., Can. Ent., XXIII, 281, *Catocala*.
atarah Strk.
 1874. Strk., Lep. Rhop. et Het., 97, pl. XI, f. 10 and 11, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 36, pr. syn.
 var. *jacquenetta* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 60, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 36, pr. var.
 var. *timandra* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 60, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. var.

var. *hero* Hy. Edw.

1884. Hy. Edw., *Papilio*, IV, 125, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. var.

var. *gisela* Meyer.

1880. Meyer, Bull. Bkln. Ent. Soc., II, 96, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. var.

HABITAT.—Canada and Massachusetts in August; Rhode Island; New York; Georgia; Florida; Texas in June; Illinois; Arizona; Colorado; California.

The type of *fratercula* is in the collection of the American Entomological Society; that of *atarrah* is with Mr. Strecker; those of *jaquenetta* are in the Lintner and Edwards collections; that of *timandra* is with Mr. Neumægen; that of *hero* is in the Edwards collection, and, finally, that of *gisela* is in the Meyer collection.

C. similis Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 511, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 17, = *gracilis* (err.)

1872. Grt., Can. Ent., IX, 169, *Catocala*.

1881. Grt., *Papilio*, I, 159, *Catocala*.

1884. Grt., Bull. Bkln. Ent. Soc., VII, 29, 37, *Catocala*.

amasia † S. & A.

1797. S. & A., Ins. Ga., II, 179, pl. 90, lower figure, *Phalæna*.

1852. Gn., Spec. Gen., Noct., III, 103, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. syn.

formula G. & R.

1866. G. & R., Proc. Ent. Soc. Phil., VI, 27, pl. IV, f. 5, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 16, *Catocala*.

1882. Grt., New List, 40, pr. syn.

var. *aholah* Strk.

1874. Strk., Lep. Rhop. et Het., 96, pl. XI, f. 8, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 6, an var. *formula*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. var.

var. *isabella* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 60, var. *formula*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. var.

HABITAT.—Rhode Island; New York in August, to Texas in May and June.

C. chelidonia Grt.

1881. Grt., *Papilio*, I, 159, *Catocala*.

1882. Grt., Ill. Essay, 67, pl. IV, f. 42, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 37, *Catocala*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

C. amasia S. & A.*

1797. S. & A., Ins. Ga., II, 178, pl. 90, (upper figure), *Phalæna*.

1811. Oliv., Enc. Meth., VIII, 291, *Noctua*.

1841. Westw., in Jardine Nat. Libr., XXXVII, 205, pl. 26, f. 3, *Catocala*.

1852. Gn., Spec. Gen., Noct., III, 103, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1204, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, *Catocala*.
cordelia Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., VIII, 59, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 37, pr. syn.
var. virens French.
 1886. French, Can. Ent., XVIII, 162, pr. var.

HABITAT.—New York; Illinois; Georgia; Texas.

Types of *cordelia* are in the Bailey and Edwards collections. The type of *virens* is with Prof. French.

C. sancta Hulst.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 38, *Catocala*.
amasia † Grt.
 1872. Grt., Trans. Am. Ent. Soc., IV, 16, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 77, pl. IX, f. 12, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 38, pr. syn.

HABITAT.—Eastern to Southern States.

C. connubialis Gn.

1852. Gn., Spec. Gen., Noct., III, 105, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1207, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 16, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 38, = *sancta*.

HABITAT.—Georgia.

Dr. Hulst cites this species, as well as *amasia* † Grt., to *sancta*, perhaps not justly. There is really no evidence that Guenée intended the *amasia* †, and, indeed, Dr. Hulst says the description does not fit. It should not therefore be cited as a synonym to *sancta*, which it must otherwise replace. Guenée's species based on Abbot's figures have been universally accepted, and if the figures are still in existence there is no reason why positive knowledge should not be yet obtainable.

C. dulciola Grt.

1881. Grt., Papilio, I, 5, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 38, *Catocala*.

HABITAT.—Ohio, June 1; Illinois.

The type is in the Edwards collection.

C. cratægi Saund.®

1876. Saund., Can. Ent., VIII, 72, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, = *polygama* var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 38, sp. dist.
var. pretiosa Lint.
 1876. Lint., Can. Ent., VIII, 121, *Catocala*.
 1878. Lint., Ent. Cont., IV, 100, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, *polygama* var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 38, pr. syn.

HABITAT.—Canada; New York, in July; Northern and Eastern States.

Dr. Lintner's type is in his own collection.

C. blandula Hulst.*

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 38, *Catocala polygama* † Grt.
 1872 Grt., Trans. Am. Ent. Soc., IV, 15, *Catocala*.
 1869. Reed, Can. Ent., II, 30, larva.
 1876. Saund., Can. Ent., VIII, 72, larva.
 1878. Lint., Ent. Cont., IV, 101, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 39, pr. syn.

HABITAT.—Northern, Eastern, and Middle States; Canada, in July and August.

C. mira Grt.*

1876. Grt., Can. Ent., VIII, 230, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, an var. *polygama*.
 1882. Grt., Ill. Essay, 70, pl. 4, f. 43, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 29, 39, sp. dist.

HABITAT.—Southern States; Florida; Kansas.

C. abbreviatella Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 14, *Catocala*.
 1877. Grt., Can. Ent., IX, 169, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, = *nuptialis*.
 1882. Grt., Ill. Essay, 66, pl. IV, f. 40, *Catocala*.
 1884. Angus, Papilio, IV, 37, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 39, *Catocala*.
 var. *whitneyi* Dodge.
 1874. Dodge, Can. Ent., VI, 125, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 7, *abbreviatella* var.
 1884. Angus, Papilio, IV, 37, an sp. dist.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 39, pr. var.

HABITAT.—Illinois; Iowa; Minnesota; Kansas; Nebraska; Utah; Texas.

C. nuptialis Wlk.*

1857. Wlk., C. B. Mus., Het., III, 1206, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 14, *Catocala*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 222, *Catocala*.
 1884. Angus, Papilio, IV, 37, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 39, *Catocala*.
 myrrha Strk.
 1874. Strk., Lep. Rhop. et Het., 97, pl. XI, f. 12, *Catocala*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 222, pr. syn.

HABITAT.—Illinois in August; Nebraska to Texas; Colorado.

C. clintonii Grt.*

1865. Grt., Proc. Ent. Soc. Phil., III, 89, pl. III, f. 4, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 13, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 35, pl. V, f. 6, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 39, *Catocala*.
 var. *helene* Pilate.
 1882. Pilate, Papilio, II, 31, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 39, pr. syn.

HABITAT.—Canada, Middle and Central States, in July; Texas, in April and May; Florida.

C. frederici Grt.*

1872. Grt., Trans. Am. Ent. Soc., iv, 14, *Catocala*.
 1877. Grt., Can. Ent., ix, 168, *Catocala*.
 1882. Grt., Ill. Essay, 71, pl. iv, f. 44, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 31, 40, *Catocala*.

HABITAT.—Texas; New Mexico; Colorado.

C. illecta Wlk.*

1857. Wlk., C. B. Mus., Het., xiii, 1205, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 13, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 40, *Catocala*.
magdalena Strk.
 1874. Strk., Lep. Rhop. et Het., 93, pl. xi, f. 9, *Catocala*.
 1874. Grt., Can. Ent., vi, 199, pr. syn.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 222, pr. syn.

HABITAT.—Illinois; Nebraska; Texas.

C. amestris Strk.

1874. Strk., Lep. Rhop. et Het., 96, pl. xi, f. 6, *Catocala*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 222, = *anna*.
 1881. Grt., Papilio, i, 161, = *anna*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 40, *Catocala*.
anna Grt.
 1874. Grt., Trans. Am. Ent. Soc., v, 96, *Catocala*.
 1875. Strk., Lep. Rhop. et Het., 105, pr. syn.
 1877. Grt. Can. Ent., ix, 168, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., iii, 8, pr. syn.
 1881. Hulst, Papilio, i, 215, pr. syn.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 40, pr. syn.
var. westcottii Grt.
 1878. Grt., Can. Ent., x, 195, *Catocala*.
 1882. Grt., Papilio, ii, 9, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 40, pr. syn.

HABITAT.—Wisconsin; Illinois; Nebraska; Texas.

C. consors S. & A.*

1797. S. & A., Ins. Ga., ii, 177, pl. 89, *Phalæna*.
 1811. Oliv., Enc. Meth., viii, 290, *Noctua*.
 1841. Duncan, in Jardine's Nat. Libr., xxxii, 206, *Catocala*.
 1852. Gn., Spec. Gen., Noct., iii, 99, *Catocala*.
 1857. Wlk., C. B. Mus., Het., xiii, 1204, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 11, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 75, pl. ix, f. 10, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 40, *Catocala*.

HABITAT.—Pennsylvania, southward; Mississippi; Texas.

C. andromache Hy. Edw.

1885. Hy. Edw., Ent. Amer., i, 50, *Catocala*.

HABITAT.—California.

The types are in the Neumœgen and Edwards collections.

C. dellilah Strk.*

1874. Strk., Lep. Rhop. et Het., 96, pl. XI, f. 7, *Catocala*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., II, 222,=*adoptiva*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 41, *Catocala*.
adoptiva Grt.
 1874. Grt., Trans. Am. Ent. Soc., V, 96, *Catocala*.
 1875. Strk., Lep. Rhop. et Het., 105, pr. syn.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. syn.
 1881. Grt., Papilio, I, 161, an nom. prior.
 1881. Hulst, Papilio, I, 215, pr. syn.
 var. *desdemona* Hy. Edw.
 1882. Edw., Papilio, II, 15, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. var.
 var. *calphurnia* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 59, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. var.

HABITAT.—Illinois; Nebraska; Kansas; Arizona; Texas, in May.

Dr. Strecker's type is in his own collection; the type of *desdemona* is in the Neumægen collection; that of *calphurnia* is in the Bailey collection.

C. cerogama Gn.*

1852. Gn., Spec. Gen., Noct., III, 96, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1202, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 9, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 23, pl. III, f. 10, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 41, *Catocala*.
aurella Fischer.
 1885. Fischer, Can. Ent., XVII, 133, *Catocala*.
eliza Fischer.
 1885. Fischer, Can. Ent., XVII, 134, *Catocala*.
 var. *bunkerl* Grt.
 1876. Grt., Can. Ent., VIII, 230, var. pr.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. var.
 1882. Grt., Papilio, II, 9, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. syn.

HABITAT.—Canada; Eastern, Middle, and Central States; Maryland, July to September.

C. verrilliana Grt.*

1875. Grt., Can. Ent., VII, 185, *Catocala*.
 1875. Grt., Bull. Buff. Soc. Nat. Sci., III, 12, 217, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 41, *Catocala*.
ophelia Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., II, 95, pr. var.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 58, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. syn.
 var. *violenta* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 58, *Catocala*.
 1883. Grt., Trans. Kans. Ac. Sci., VIII, 50, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. syn.
 var. *votiva* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 41, pr. var.

HABITAT.—Colorado in October; Texas, April, May, and June; New Mexico; Arizona; California.

Types of *ophelia* and *violenta* are in Mr. Neumægen's collection, and in the Edwards collection is another type of *violenta*

C. ultronia Hbn.*

1818. Hbn., Zuträge, II, 26, f. 347, 348, *Eunetis*.
 1816. Hbn., Verzeichniss, 277, *Eunetis*.
 1852. Gn., Spec. Gen., Noct., III, 89, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1197, *Catocala*.
 1869. Pack., Guide to Study Ins., 317, pl. VIII, f. 4, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 6, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 75, pl. IX, f. 7, *Catocala*.
 1874. Saund., Can. Ent., VI, 147, *Catocala*.
 1880. Saund., Can. Ent., XII, 4, *Catocala*.
 1883. Saund., Fruit Insects, 177, f. 188, 189, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 42, *Catocala*.
 1884. Bean, Can. Ent., XVI, 67, *Catocala*.
 var. *celia* Hy. Edw.*
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 58, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. var.
 var. *mopsa* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 58, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, pr. var.
 var. *adriana* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 57, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, pr. var.
 var. *herodias* Strk.
 1876. Strk., Lep. Rhop. et Het., 121, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. var.

HABITAT.—Canada to Florida, and Texas, west to the great plains. July and August.

A type of *celia* is with Mr. Neumægen. Types of *celia*, *mopsa*, and *adriana* are in the Edwards collection.

C. coccinata Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 6, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 21, pl. 3, f. 9, *Catocala*.
 1881. Coquillett, Papilio, I, 56, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 42, *Catocala*.
 circe Strk.
 1876. Strk., Lep. Rhop. et Het., 121, pr. var.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 57, an sp. dist.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 var. *sinuosa* Grt.
 1879. Grt., Bull. Bkln. Ent. Soc., I, 77, *Catocala*.
 1879. Grt., Can. Ent., XI, 15, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 11, pr. var.
 1882. Grt., Papilio, II, 8, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. var.

HABITAT.—Canada to Florida, to Texas; Illinois; Central States; Canada and New York, July to September.

C. illa Cram.*

1779. Cram., Lep. Ex., I, 53, pl. 33, f. B. C., *Phalæna*.
 1810. Oliv., Enc. Meth., VIII, 286, *Noctua*.
 1816. Hbn., Verzeichniss, 277, *Eunetis*.
 1832. Gn., Spec. Gen., Noct., III, 91, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1199, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 8, *Catocala*.
 1875. Canfield, Can. Ent., VII, 208, larva.
 1882. Koebele, Bull. Bkln. Ent. Soc., V, 22, larva.
 1883. Worthington, Papilio, III, 40, *Catocala*.
 1884. French, Can. Ent., XVI, 12, life history.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 42, *Catocala*.
 var. *uxor* Gn.*
 1852. Gn., Spec. Gen., Noct., III, 92, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1199, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 8, ♀ pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. var.
 umbrosa Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 confusa Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 decorata Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 obsoleta Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 duplicata Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 conspicua Worth.
 1883. Worthington, Papilio, III, 40, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 42, pr. syn.
 var. *zoe* Behr.
 1870. Behr, Trans. Am. Ent. Soc., III, 24, *Catocala*.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 214, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, pr. var.
 var. *osculata* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, pr. var.

HABITAT.—Canada; United States generally. Canada and Eastern States, July to September.

C. aholibah Strk.*

1874. Strk., Lep. Rhop. et Het., 72, pl. IX, f. 5, *Catocala*.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 213, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 43, *Catocala*.

HABITAT.—California; Washington; Oregon; Colorado in August; New Mexico.

C. marmorata Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 508, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 7, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 73, pl. IX, f. 6, *Catocala*.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 212, *Catocala*.
 1877. Angus, Can. Ent., IX, 239, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, 30, *Catocala*.
 1887. Angus, Ent. Amer., III, 3, *Catocala*.

HABITAT.—New York; Ohio; Kentucky; California.

Found in isolated specimens throughout the United States.

C. parta Gn.*

1852. Gn., Spec. Gen., Noct., III, 84, pl. XVI, f. 1, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1193, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 6, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 38, pl. v, f. 10, *Catocala*.
 1883. Hy. Edw., Papilio, III, 24, larva.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 43, *Catocala*.
amatriz † Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1195, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 6, pr. syn.
 var. *perplexa* Strk.
 1874. Strk., Lep. Rhop. et Het., 38, pl. v, f. 11, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 43, pr. syn.
 var. *petulans* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc. VII, 43, pr. var.

HABITAT.—Eastern and Northern United States, July to October; Canada, July to September; Hudson's Bay territory; Colorado.

C. unijuga Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1194, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 5, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 37, pl. v, f. 9, *Catocala*.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 55, *Catocala*.
 1881. Kellicott, Can. Ent., XIII, 38, larva on *Populus*.
 1883. Bunker, Can. Ent., XV, 100, larva on *Willow*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 44, *Catocala*.
junctura † Grt.
 1872. Grt., Trans. Am. Ent. Soc., IV, 5, *Catocala*.
 1877. Grt., Can. Ent., IX, 168, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. syn.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, var. *unijuga*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 44, pr. syn.
lucilla Worth.
 1883. Worthington, Papilio, III, 39, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 44, pr. syn.
 var. *meskei* Grt.
 1873. Grt., Can. Ent., VI, 161, 233, *Catocala*.
 1874. Strk., Lep. Rhop. et Het., 70, pr. syn.
 1877. Grt., Can. Ent., IX, 168, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, pr. var.

1880. Edw., Bull. Bkln. Ent. Soc., III, 55, *Catocala*.
 1883. Bunker, Can. Ent., xv, 100, larva.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 44, pr. var.
 var. *beaniana* Grt.
 1878. Grt., Can. Ent., x, 195, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 11, var. *briseis*.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 55, an sp. dist.
 1882. Grt., Ill. Essay, 67, pl. iv, f. 42, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 44, pr. var.

HABITAT.—New York to Illinois to Hudson's Bay territory; Northern and Eastern States, July to September; Colorado.

C. pura Hulst.*

1880. Hulst, Bull. Bkln. Ent. Soc., II, 96, *Catocala*.
 1881. Grt., Papilio, I, 163, = *semireliota*.
 1881. Grt., Trans. Kans. Ac. Sci., VII, 69, = *semireliota*.
 1881. Hulst, Papilio, I, 163, an sp. dist.
 1883. Grt., Can. Ent., xv, 11, = *semireliota*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 44, sp. dist.

HABITAT.—Kansas; Colorado in October; New Mexico.
 The type is in the Hulst collection.

C. stretchii Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 24, *Catocala*.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 212, *Catocala*.
 1877. Strk., Lep. Rhop. et Het., 130, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 30, 44, *Catocala*.
 var. *portia* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., II, 94, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 45, pr. var.
 var. *augusta* Hy. Edw.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 184, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 45, pr. var.
 var. *hippolyta* Hy. Edw.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 211, *Catocala*.
 1874. Hy. Edw., in Strk. Rhop. et Het., 99, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 45, pr. var.
 jessica Hy. Edw.
 1877. Hy. Edw., Pacific Coast Lep. No. 25, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 45, pr. syn.

HABITAT.—California; Arizona; Nevada; Colorado.
 Mr. Edwards's types are, I believe, all in his own collection.

C. rosalinda Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 55, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 45, *Catocala*.

HABITAT.—Colorado; Kansas.

Types are in the Bailey and Edwards collections.

C. faustina Strk.*

1873. Strk., Lep. Rhop. et Het., 21, pl. III, f. 8, *Catocala*.
 1874. Grt., Proc. Bost. Soc. N. H., XVI, 243, *Catocala*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 210, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 31, 45, *Catocala*.
perdita Hy. Edw.
 1874. Hy. Edw., in Strk. Lep. Rhop. et Het., 100, *Catocala*.
 1877. Strk., Lep. Rhop. et Het., 129, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., iii, 10, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 45, pr. syn.
zillak Strk.
 1877. Strk., Lep. Rhop. et Het., 129, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 45, pr. syn.
 var. *verecunda* Hulst.*
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 45, pr. var.
 var. *allusa* Hulst.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 45, *Catocala*.
 1891. Hulst, in Smith's List Lep., 59, pr. var.

HABITAT.—Michigan; Nevada; Montana; Colorado in October; Washington; California; Arizona; New Mexico; Utah.

The types are in each case in the collections of the describers, except that the type of *allusa* is with Mr. Graef.

C. mariana Hy. Edw.*

1874. Hy. Edw., in Strk., Lep., Rhop. et Het., 99, *Catocala*.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., vi, 210, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 31, 45, *Catocala*.
 var. *francisca* Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., iii, 57, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 45, pr. var.

HABITAT.—California; Colorado in October.

The types are in the Edwards collection; a type of the variety also with Mr. Neumögen.

C. briseis Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc., Phil., ii, 508, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 5, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 20, pl. 3, f. 7, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 30, 45, *Catocala*.
parta Wlk.
 1857. Wlk., C. B. Mus., Het., xiii, 1193, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 5, pr. syn.
 var. *groteiana* Bailey.*
 1879. Bailey, North Amer. Ent., i, 21, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., iii, 11, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 46, pr. var.
 var. *semirelicta* Grt.
 1874. Grt., 6th Rept. Peab. Ac. Sci., 35, *Catocala*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, pl. 1, f. 11, *Catocala*.
 1876. Strk., Lep. Rhop. et Het., 121, pr. syn.
 1880. Hulst, Bull. Bkln. Ent. Soc., iii, 11, pr. var.
 1881. Grt., Papilio, i, 163, an sp. dist.
 1881. Hulst, Papilio, i, 218, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., vii, 46, pr. var.

HABITAT.—Canada; Northern, Eastern, and Middle States, July to September; Colorado in October; New Mexico.

A specimen of *briseis* labeled by Mr. W. H. Edwards is in the collection of the American Entomological Society; but I am not certain that it is the type. The type of *groteiana* is in the Bailey collection.

C. hermia Hy. Edw.*

1880. Hy. Edw., Bull. Bkln. Ent. Soc., II, 93, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 46, *Catocala*.

HABITAT.—Colorado; New Mexico.

The type is in the Edwards collection.

C. electilis Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1209, *Catocala*.

1881. Butler, Papilio, I, 171, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 46, *Catocala*.

var. *californica* Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 509, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 5, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 98, pl. 11, f. 13, *Catocala*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 211, *Catocala*.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 55, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 40, pr. var.

var. *oleopatra* Hy. Edw.

1874. Hy. Edw., in Strk. Lep. Rhop. et Het., 99, *Catocala*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 209, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 11, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. var.

var. *irene* Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 24, *Catocala*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 211, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. var.

virgilia, Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, var. *irene*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. syn.

var. *volumnia* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, var. *irene*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. var.

var. *valeria* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, var. *irene*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. syn.

HABITAT.—California; Mexico; Colorado; Arizona; Nevada.

Walker's type is probably in the British Museum. The type of W. H. Edwards's species is in the collection of the American Entomological Society. The types of the described varieties are in Mr. Hy. Edwards's collection; types of *virgilia* and *valeria* also with Mr. Neumœgen.

C. luciana Hy. Edw.

1874. Hy. Edw., in Strk., Lep., Rhop. et Het., 99, *Catocala*.

1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 211, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 47, *Catocala*.

nebraska Dodge.

1875. Dodge, Can. Ent., VII, 2, *Catocala*.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 54, pr. syn.
var *somnus* Dodge.

1881. Dodge, Can. Ent., XII, 40, var. *nebrascæ*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 46, pr. var.

HABITAT.—Colorado; Kansas; Nebraska.

The type of *luciana* is the Edwards collection.

C. concumbens Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1198, *Catocala*.

1863. Saund., Proc. Ent. Soc. Phil., III, 29, larva.

1872. Grt., Trans. Am. Ent. Soc., IV, 7, *Catocala*.

1873. Strk., Lep. Rhop. et Het., 38, pl. 5, f. 12, *Catocala*.

1875. Strk., Lep. Rhop. et Het., 106, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 47, *Catocala*.

var. *diana* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 57, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 47, pr. var.

aberr. *hillii* Grt.

1883. Grt., Papilio, III, 43, an aberr. pr.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 47, aberr. pr.

HABITAT.—Canada; Northern, Eastern, and Middle States, August and September.

The type of *diana* is in the Allen collection, that of *hillii* is in the Hill collection.

C. cara Gn.*

1852. Gn., Spec. Gen., Noct., III, 87, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1196, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 7, *Catocala*.

1875. Strk., Lep. Rhop. et Het., 98, pl. XI, f. 14, *Catocala*.

1880. Kæbele, Bull. Bkln. Ent. Soc., III, 22, larva.

1882. French, Papilio, II, 167, life history.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 47, *Catocala*.

var. *carissima* Hulst.*

1880. Hulst, Bull. Bkln. Ent. Soc., II, 97, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc. VII, 47, pr. var.

sylvia Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 57, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 47, =*carissima*.

HABITAT.—Canada to Florida; Southern and Central States, Texas, Northern and Central States, August to October.

The type of *carissima* is in the Hulst collection; that of *sylvia* is in the Edwards collection.

C. amatix Hbn.*

1810. Hbn., Samml. Ex. Schmett., II, Noct. f. 427, *Lamprosia*.

1816. Hbn., Verzeichniss, 277, *Lamprosia*.

1852. Gn., Spec. Gen., Noct., III, 86, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1195, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 7, *Catocala*.

1875. Strk., Lep. Rhop. et Het., 98, pl. XI, f. 15, 16, *Catocala*.

1881. Kellicott, Papilio, I, 142, larva.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 47, *Catocala*.

1884. French, *Papilio*, iv, 8, life history.
selecta Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1197, *Catocala*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
 1872. Grt., Trans. Am. Ent. Soc., IV, 7, pr. syn.
parta † Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1193, *Catocala*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
editha Edw.
 1874. Edw. (W. H.), Trans. Am. Ent. Soc., v, 112, *Catocala*.
 1876. Mead, in Wheeler's Rept. Surv. West 100 Merid., v, 790, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 12, pr. syn.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 47, pr. syn.
var. nurus Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1197, *Catocala*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
 1872. Grt., Trans. Am. Ent. Soc., IV, 7, pr. syn.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. var.

HABITAT.—Nova Scotia to Texas, to Florida; Arizona; Colorado in August; Northern range, August to October.

C. junctura Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1196, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 5, *Catocala*.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, an var. *unifuga*.
 1882. Grt., Can. Ent., XIV, 47, *Catocala*.
 1883. Grt., Can. Ent., XV, 12, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 48, *Catocala*.
walshii Edw.
 1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 509, *Catocala*.
 1873. Grt., Can. Ent., v, 163, 233, *Catocala*.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 55, *Catocala*.
 1881. Grt., *Papilio*, I, 163, *Catocala*.
 1881. Hulst, *Papilio*, I, 218, *Catocala*.
 1882. Grt., Can. Ent., XIV, 47, pr. syn.
 1883. Grt., Can. Ent., XV, 12, pr. syn.
 1884. Strk., *Papilio*, IV, 74, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. syn.
 1886. French, Can. Ent., XVIII, 161, an var. dist.
var. arizonæ Grt.
 1873. Grt., Can. Ent., v, 163, 233, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 12, = *walshii*.
 1881. Grt., Can. Ent., XIII, 232, an sp. dist.
 1883. Grt., Can. Ent., XV, 12, an sp. dist.
 1884. Strk., *Papilio*, IV, 74, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. var.
var. aspasai Strk.
 1874. Strk., Lep. Rhop. et Het., 94, *Catocala*.
 1874. Grt., Can. Ent., VI, 199, = *arizonæ*.
 1883. Grt., Can. Ent., XV, 12, pr. syn.
 1884. Strk., *Papilio*, IV, 74, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. var.
var. cassandra Hy. Edw.
 1875. Hy. Edw., Proc. Cal. Ac. Sci., VI, 214, *Catocala*.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 56, *Catocala*.

1881. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. var.
sara French.

1883. French, Can. Ent., XV, 163, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, =*cassandra*.

HABITAT.—Texas to California; Colorado; Utah; New Mexico.

The type of *junctura* is in the British Museum; that of *walshii* is, I believe, destroyed; that of *arizonæ* is in the collection of the American Entomological Society; that of *aspasia* is in the Strecker collection; that of *cassandra* is in the Edwards collection, while that of *sara* is, I believe, with Prof. French.

This species has made as much bad blood as almost any other American noctuid, and even now the synonymy above given will probably be questioned by some.

C. babayaga Strck.

1884. Strk., Papilio, IV, 73, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, *Catocala*.
arizonæ † Grt.

1881. Grt., Can. Ent., XIII, 232, *Catocala*.

1883. Grt., Can. Ent., XV, 12, *Catocala*.

1884. Strk., Papilio, IV, 73, pr. syn.

HABITAT.—Arizona.

The type is with Dr. Strecker.

C. relicta Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1192, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 4, *Catocala*.

1873. Strk., Lep. Rhop. et Het., 19, pl. III, f. 5 and 6, *Catocla*.

1875. Grt., Can. Ent., VII, 186, *Catocala*.

1876. Grt., Can. Ent., VIII, 231, *Catocala*.

1876. Grt., Ann. Lyc. Nat. Hist. N. Y., XI, 301, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 48, *Catocala*.

1886. French, Can. Ent., VIII, 162, *Catocala*.

1888. Clark, Can. Ent., XX, 17, life history.
frazini † Gn.

1852. Gn., Spec. Gen., Noct., III, 83, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 4, pr. syn.
var *phrynia* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 54, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. syn.
var *bianca* Hy. Edw.

1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 54, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 48, pr. syn.

HABITAT.—Nova Scotia to New York; Middle States July to October; Oregon; Colorado.

Types of the varieties are in the Hill and Edwards collections.

C. elda Behrens.1887. Behrens, Can. Ent., xix, 199, *Catocala*.**HABITAT.**—Oregon.

The type is in Dr. Behrens's collection, and a duplicate is in the American Museum of Natural History. The locality, Oregon, for *relicta* is perhaps due to a misnamed specimen of this species.

C. tristis Edw.*1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 511, *Catocala*.1872. Grt., Trans. Am. Ent. Soc., IV, 4, *Catocala*.1873. Strk., Lep. Rhop. et Het., 17, pl. III, f. 1, *Catocala*.1874. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 49, *Catocala*.

HABITAT.—Canada, Northern, Eastern, Middle, and Central States, August.

C. epione Dru.*1773. Drury, Illustr., 1, 46, pl. 23, f. 2, *Noctua*.1779. Cram., Pap. Ex., II, 9, pl. 102, f. E. F., *Noctua*.1781. Fabr., Spec. Ins., II, 222, *Noctua*.1787. Fabr., Mant. Ins., II, 151, *Noctua*.1788. Gmel., ed. Linn. Syst. Nat., V, 2538, *Noctua*.1794. Fabr., Ent. Syst., III, 2, 58, *Noctua*.1811. Oliv., Enc. Meth., 288, pl. LXXXV, f. 6, *Noctua*.1816. Hbn., Verzeichniss, 276, *Mormonia*.1840. Westw., ed. Dru. Illustr., I, 44, pl. XXIII, f. 2, *Catocala*.1852. Gn., Spec. Gen., Noct., III, 93, *Catocala*.1857. Wlk., C. B. Mus., Het., XIII, 1200, *Catocala*.1872. Grt., Trans. Am. Ent. Soc., IV, 2, *Catocala*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 31, 49, *Catocala*.

HABITAT.—Canada, Northern, Eastern, Middle, and Central States, July.

§ **CATABPTA** Hulst.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 21.

C. antinympha Hbn.*1816. Hbn., Verzeichniss, 278, *Ephesia*.1857. Wlk., C. B. Mus., Het., XIII, 1203, *Catocala*.1872. Grt., Trans. Am. Ent. Soc., IV, 13, *Catocala*.1873. Strk., Lep. Rhop. et Het., 36, pl. V, f. 7, *Catocala*.1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 49, *Catabapta*.
paranympha † Drury.1773. Drury, Illustr., I, pl. 23, f. 6, *Phalæna*.

1816. Hbn., Verzeichniss, 278, pr. syn.

affinis Westw.1840. Westw., ed. Drury, Illustr., I, 44, pl. 23, f. 6, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1203, pr. syn.

melanympha Gn.1852. Gn., Spec. Gen., Noct., III, 98, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1203, pr. syn.

HABITAT.—Canada to Maryland; west to the Mississippi Valley, July and August.

C. serena Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 510, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 13, *Catocala*.
 1873. Strk., Lep. Rhop. et. Het., 23, pl. III, f. 11, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 49, *Catabapta*.

HABITAT.—Canada; northern and eastern United States—eastern Siberia. July.

C. badia G. & R.*

1868. G. & R., Proc. Ent. Soc. Phila., VII, 22, pl. IV, f. 1, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 12, *Catocala*.
 1876. Andrews, Can. Ent., VIII, 198, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 49, *Catabapta*.
 1887. Hulst, Ento. Amer., III, 27, *Catocala*.
 var. *cælebs* Grt.*
 1874. Grt., Trans. Am. Ent. Soc., V, 96, *Catocala*.
 1878. Grt., Can. Ent., X, 233, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 9, pr. var.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 59, an sp. dist.
 1883. Grt., Can. Ent. XV, 23, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 50, pr. var.
 var. *phœbe* Hy. Edw.
 1884. Hy. Edw., Papilio, IV, 125, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 50, pr. var.

HABITAT.—Canada; Northern, Eastern, and Middle States, August. The type of *phæbe* is in the Edwards Collection.

C. muliercula Gn.*

1852. Gn., Spec. Gen., Noct., III, 97, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1203, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 12, *Catocala*.
 1874. Strk., Lep. Rhop. et. Het., 74, pl. IX, f. 9, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 50, *Catabapta*.
 var. *peramans* Hulst.
 1884. Hulst., Bull. Bkln. Ent. Soc., VII, 50, pr. var.

HABITAT.—Eastern and central United States.

C. habilis Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 11, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., VIII, 32, 50, *Catabapta*.
 1886. Kellicott, Ent. Amer., II, 46, larva.
 var. *basalis* Grt.
 1876. Grt., Can. Ent., VIII, 230, pr. var.
 1880. Hulst, Bull. Bkln. Ent. Soc., VII, 50, pr. syn.
 1882. Grt., Papilio, II, 9, pr. var.

HABITAT.—Canada; Eastern, Middle, and Central States, August to October.

C. innubens Gn.*

1852. Gn., Spec. Gen., Noct., III, 98, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1203, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 8, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 50, *Catabapta*.
 1888. French, Can. Ent., XX, 170, larva.
 var. *hinda* French.
 1881. French, Papilio, I, 111, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 50, pr. syn.
 var. *flavidalis* Grt.*
 1874. Grt., Trans. Am. Ent. Soc., V, 95, pr. var.
 1881. Grt., Papilio, I, 163, pr. var.
 1882. Grt., Papilio, II, 9, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VIII, 50, pr. var.
 var. *scintillans* G. & R.*
 1866. G. & R., Proc. Ent. Soc. Phil., VI, 28, pl. IV, f. 6, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 8, pr. var.
 1882. Grt., Papilio, II, 8, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 50, pr. var.

HABITAT.—Canada, in September and August; Eastern, Middle, and Central United States; Illinois, in June; Wisconsin.

C. paleogama Gn.*

1852. Gn., Spec. Gen., Noct., III, 97, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1202, *Catocala*.
 1865. Grt., Proc. Ent. Soc. Phil., III, 87 et 541, pl. 3, f. 2, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 10, 11, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 51, *Catabapta*.
 assida Fager.
 1882. Fager, Can. Ent., XIV, 120, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 51, pr. syn.
 var. *phalanga* Grt.*
 1865. Grt., Proc. Ent. Soc. Phil., III, 86, pl. III, f. 1, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 11, pr. var.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 9, aberr. pr.
 1882. Grt., Papilio, II, 9, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 51, pr. var.

HABITAT.—Eastern, Middle, and Central States, July and August.

C. neogama S. & A.*

1797. S. & A., Ins. Ga., II, 175, pl. 88, *Phalæna*.
 1811. Oliv., Enc. Meth., VIII, 290, *Noctua*.
 1840. Duncan, in Jardine Nat. Libr., 37, 202, pl. 26, ff. 1-2, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 9, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 35, pl. 5, ff. 4, 5, *Catocala*.
 1881. Grt., Papilio, I, 163, *Catocala*.
 1882. Grt., Papilio, II, 8, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 51, *Catabapta*.
 var. *communis* Grt.
 1872. Grt., Trans. Am. Ent. Soc., IV, 9, *Catocala*.
 1875. Grt., Bull. Bkln. Ent. Soc., II, 221, *Catocala*.
 1882. Grt., Papilio, II, 8, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 52, pr. syn.
 1887. Grt., Can. Ent., XIX, 113, an sp. dist.
 neogama † Gn.
 1852. Gn., Spec. Gen., Noct., III, 96, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1202, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 9, = *communis*.

1887. Grt., Can. Ent., XIX, 113, = *communis*.

var. *snoviana* Grt.

1876. Grt., List Noctuidæ, 41, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 10, an var. *ilia*.

1881. Grt., Papilio, 1, 8, an sp. dist. *ilia*.

1882. Grt., Papilio, II, 7, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 51, pr. var. ?

HABITAT.—United States east of the Rocky Mountains; Kansas; Arizona. Eastern range in July and August.

The type of *snoviana* is in the Edwards collection.

C. subnata Grt.*

1865. Grt., Proc. Ent. Soc. Phil., III, 326, pl. IV, f. 5, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 9, *Catocala*.

1873. Strk., Lep. Rhop. et Het., 34, 106, pl. V, f. 3, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 51, *Catabapta*.

HABITAT.—Eastern and central United States. New York in August.

C. piatrix Grt.*

1865. Grt., Proc. Ent. Soc. Phil., III, 88, 532, pl. III, f. 3, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 10, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 74, pl. IX, f. 8, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 52, *Catabapta*.

var. *dionyza* Hy. Edw.

1884. Hy. Edw., Papilio, IV, 124, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 52 pr. var.

HABITAT.—United States east of the Rocky Mountains; Arizona; Texas in July. Northern range August and September.

The type of *dionyza* is with Mr. Neumægen.

C. nebulosa Edw.*

1864. Edw. (W. H.), Proc. Ent. Soc. Phil., II, 510, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 11, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 75, pl. IX, f. 11, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 52, *Catabapta*.

ponderosa G. & R.

1866. G. & R., Proc. Ent. Soc. Phil., VI, 23, pl. IV, f. 2, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 75, pr. syn.

HABITAT.—Middle and Central States.

C. judith Strk.*

1874. Strk., Lep. Rhop. et Het., 95, pl. XI, f. 5, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 52, *Catocala*.

levettei Grt.

1874. Grt., Trans. Am. Ent. Soc., V, 95, *Catocala*.

1875. Strk., Lep. Rhop. et Het., 105, pr. syn.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 8, 12, pr. syn.

1881. Grt., Papilio, I, 160, *Catocala*.

1881. Hulst, *Papilio*, I, 218, pr. syn.

var. *miranda* Hy. Edw.

1881. Hy. Edw., *Papilio*, I, 118, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 52, pr. var.

HABITAT.—Eastern, Middle and Central States.

The type of *miranda* is in the Edwards collection.

C. robinsonii Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 20, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 71, pl. IX, f. 1, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 52, *Catabapta*.

var. *curvata* French.

1881. French, *Papilio*, I, 218, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 52, pr. syn.

HABITAT.—Eastern, Middle and Central States; New York; Illinois; Mississippi.

C. dejecta Strk.

1880. Strk., Bull. Bkln. Ent. Soc., II, 97, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 52, *Catabapta*.

HABITAT.—Eastern, Middle and Central States.

C. resecta Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 4, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 71, pl. IX, f. 2, *Catocala*.

1881. Kellicott, *Papilio*, I, 141, larva sub nom. *flexilis*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 53, *Catabapta*.

1886. Kellicott, Ent. Amer., II, 46, larva.

var. *flexilis* Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 4, *Catocala*.

1874. Strk., Lep. Rhop. et Het., 71, pl. IX, f. 3 & 4, *Catocala*.

1876. Grt., Can. Ent., VIII, 229, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 53, pr. syn.

1891. Grt., Can. Ent., XXIII, 281, *Catocala*.

HABITAT.—Canada; Northern, Eastern, Middle, and Central States. August and September.

C. luctuosa Hulst.

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 53, *Catabapta*.

HABITAT.—Middle and Western States.

C. vidua S. & A.*

1797. S. & A., Ins. Ga., II, 181, pl. 91, *Phalæna*.

1811. Oliv., Enc. Meth., VII, 288, *Noctua*.

1872. Grt., Trans. Am. Ent. Soc., IV, 3, *Catocala*.

1884. Hulst, Bull. Bkln. Ent. Soc. VII, 53, *Catabapta*.

desperata Gn.

1852. Gn., Spec. Gen., Noct. III, 95, *Catocala*.

1857. Wlk., C. B. Mus., Het., XIII, 1201, *Catocala*.

1872. Grt., Trans. Am. Ent. Soc., IV, 3, † pr. syn.

1873. Strk., Lep. Rhop. et Het., 33, pl. v. f. 2, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., III, 12, pr. syn.

1882. Grt., New List, 65, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 53, pr. syn.
 1888. French, Can. Ent., XX, 28, *Catocala*.

HABITAT.—Canada to Florida; Central States. August and September.

C. maestosa Hulst.*

1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 53, *Catobapta*.
vidua et viduata † Gn.
 1852. Gn., Spec. Gen., Noct., III, 94 et 400, *Catocala*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 3, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 17, pl. III, 2, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 12, *Catocala*.
 1882. Grt., New List, 65, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 53, pr. syn.
guenei Grt.
 1887. Grt., Can. Ent. XIX, 115, *Catocala*.

HABITAT.—Pennsylvania, southward; Central States.

C. lacrymosa Gn.*

1852. Gn., Spec. Gen., Noct., III, 93, *Catocala*.
 1857. Wlk., C. B. Mus., Het., XIII, 1199, ♀=*vidua*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 9, *Catocala*.
 1873. Strk., Lep. Rhop. et Het., 18, pl. III, f. 3, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 54, *Catabapta*.
var. ulalume Strk.
 1877. Strk., Lep. Rhop. et Het., 132, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 54, pr. syn.
var. evelina French.
 1881. French, Papilio, I, 110, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 54, pr. var.
emilia Hy. Edw.
 1881. Hy. Edw., Papilio, I, 117, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 54, =*evelina*.
var. zelica French.
 1881. French, Papilio, I, 111, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 54, pr. var.
var. paulina Hy. Edw.
 1880. Hy. Edw., Bull. Bkln. Ent. Soc., III, 54, pr. var.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 54, pr. var.

HABITAT.—New York to Texas; Ohio; Illinois; Southern States.

C. sappho Strk.*

1874. Strk., Lep. Rhop. et Het., 95, pl. XI, f. 4, *Catocala*.
 1880. Hulst, Bull. Bkln. Ent. Soc., III, 13, *Catocala*.
 1881. French, Papilio, I, 57, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 54, *Catabapta*.
 1886. French, Can. Ent., XVIII, 162, *Catocala*.

HABITAT.—Illinois; Texas; Central and Southern States.

C. agrippina Strk.*

1874. Strk., Lep. Rhop. et Het., 95, pl. XI, f. 1, 3, *Catocala*.
 1884. Hulst, Bull. Bkln. Ent. Soc., VII, 32, 55, *Catabapta*.

var. *subviridis* Harv.1877. Harv., Can. Ent., ix, 193, *Catocala*.

1880. Hulst, Bull. Bkln. Ent. Soc., iii, 13, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., vii, 55, pr. var.

HABITAT.—Middle and Southern States to Texas; Texas in July.

C. insolabilis Gn.*1852. Gn., Spec. Gen., Noct., iii, 94, *Catocala*.1857. Wlk., C. B. Mus., Het., xiii, 1200, *Catocala*.1872. Grt., Trans. Am. Ent. Soc., iv, 3, *Catocala*.1873. Strk., Lep. Rhop. et Het., 33, pl. v, f. 1, *Catocala*.1875. Grt., Bull. Buff. Soc. Nat. Sci., iii, 187, pl. v, f. 3, *Catocala*.1880. Hulst, Bull. Bkln. Ent. Soc., iii, 13, *Catocala*.1884. Angus, Papilio, iv, 35, *Catocala*.1884. Hulst, Bull. Bkln. Ent. Soc., vii, 52, 55, *Catabapta*.

HABITAT.—Canada in June; Middle, Central, and Southern States, August and September.

C. angusi Grt.*1876. Grt., Can. Ent., viii, 229, *Catocala*.1877. Grt., Bull. Buff. Soc. Nat. Sci., iii, 188, pl. 5, f. 1 and 2, *Catocala*.1880. Hulst, Bull. Bkln. Ent. Soc., iii, 13, an var. *insolabilis*.

1884. Angus, Papilio, iv, 35, an sp. dist.

1884. Hulst, Bull. Bkln. Ent. Soc., vii, 52, 55, an sp. dist.

var. *lucetta* Hy. Edw.

1882. Hy. Edw., in French, Cat. Ills., 4, pr. var.

1884. Hulst, Bull. Bkln. Ent. Soc., vii, 55, pr. syn.

HABITAT.—Middle, Central, and Southern States.

The type of *angusi* is in the American Museum of Natural History, from the Angus Collection.*C. obscura* Strk.*1873. Strk., Lep. Rhop. et Het., 19, pl. iii, f. 4, *Catocala*.1884. Angus, Papilio, iv, 37, *Catocala*.1884. Hulst, Bull. Bkln. Ent. Soc., vii, 52, 55, *Catabapta*.

1886. Kellicott, Ent. Amer., ii, 46, larva.

simulacilis Grt.1874. Grt., Trans. Am. Ent. Soc., v, 95, *Catocala*.

1875. Strk., Lep. Rhop. et Het., 106, pr. syn.

1876. Grt., Can. Ent., viii, 229, an sp. dist.

1882. Grt., Papilio, ii, 8, an var. pr.

1884. Angus, Papilio, iv, 37, pr. syn.

1884. Hulst, Bull. Bkln. Ent. Soc., vii, 55, pr. syn.

var. *residua* Grt.1874. Grt., Proc. Bost. Soc. N. H., xvi, 242, *Catocala*.1875. Strk., Lep. Rhop. et Het., 106, an var. *insolabilis*.1877. Grt., Bull. Buff. Soc. Nat. Sci., iii, pl. 5, f. 4, *Catocala*.1877. Harv., Can. Ent., ix, 194, *Catocala*.1880. Hulst, Bull. Bkln. Ent. Soc., iii, 13, an var. *insolabilis*.

1884. Angus, Papilio, iv, 35, an sp. dist.

1884. Hulst, Bull. Bkln. Ent. Soc., vii, 55, pr. var.

HABITAT.—Canada to Middle and Central States in August; Colorado.

The type of *residua* is in the American Museum of Natural History from the Angus Collection.

Catocala adultera Hinze, recorded by Motschulsky in his Etudes, 1857, p. 47, as from California, has been omitted for want of proper authentication. It is likely that one of the common Pacific slope species resembling *adultera* somewhat, was mistaken for it.

Genus **OPHIDERES** Bdv.

1834. Bdv., Fn. Ent. Madag., Lep., 99.

O. materna Linn.*

- 1767. Linn., Syst. Nat., ed. XII, 2, p. 840, *Noctua*.
- 1773. Drury, Illustr., II, 24, pl. 13, f. 4, *Noctua*.
- 1779. Cram., Pap. Exot., II, 118, pl. 174, f. B, *Phalæna*.
- 1781. Fabr., Spec. Ins., II, 212, *Noctua*.
- 1782. Cram., Pap. Exot., III, 137, pl. 267, f. E, *Phalæna*.
- 1787. Fabr., Mant. Ins., II, 137, *Noctua*.
- 1788. Gmel., ed. Linn., Syst. Nat., v, p. 2533, *Noctua*.
- 1793. Fabr., Ent. Syst., III, 2, 16, *Noctua*.
- 1811. Oliv., Enc. Meth., VIII, 259, *Noctua*.
- 1816. Hbn., Verzeichniss, 264, *Rhytia*.
- 1834. Bdv., Fn. Ent. Madag., 100, *Ophideres*.
- 1841. Duncan, in Jardine, Nat. Libr., XXXII, 201, pl. 35, f. 2, *Triphæna*.
- 1852. Gn., Spec. Gen., Noct., III, 113, *Ophideres*.
- 1856. Lucas, in Sagra's Cuba, 307, *Ophideres*.
- 1857. Wlk., C. B. Mus., Het., XIII, 1222, *Ophideres*.
- 1868. H. Sch., Corr. Blatt, 1868, Cuba, 23, *Ophideres*.
- 1875. Grt., Proc. Bost. Soc. N. H., XVIII, 416, *Ophideres*.
- 1885. Gundlach, Cont. Ent. Cub., 340, *Ophideres*,
hybrida Fabr.
- 1775. Fabr., Syst. Ent., 593, *Noctua*.
- 1781. Fabr., Spec. Ins., II, 212, pr. syn.
calaminea Cram.
- 1779. Cram., Pap. Exot., II, 95, pl. 74, f. A, *Phalæna*.
- 1781. Fabr., Spec. Ins., II, 212, pr. syn.

HABITAT.—Florida, southward.

A tropical insect in habitus and form. The literature as a South and Central American insect is not given.

Genus **STRENOLOMA** Grt.

1880. Grt., No. Amer. Ent., I, 97.

S. lunilinea Grt.*

- 1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 127, *Spiloloma*.
- 1880. Grt., No. Amer. Ent., I, 97, *Strenoloma*.
- 1882. Grt., Ill. Essay, 71, pl. IV, f. 45, *Strenoloma*.

HABITAT.—Pennsylvania; Virginia; Kansas; Illinois; Mississippi; District of Columbia in August.

The type is in the British Museum.

Genus **TOXOCAMPA** Gn.

1841. Gn., Ann. Soc. Ent. Fr., x, 75.

T. victoria Grt.,*1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 163, *Toxocampa*.1880. Grt., Bull. Bkln. Ent. Soc., III, 48, *Toxocampa*.

HABITAT.—Victoria; New York; Colorado in August; New Mexico.
The type is in the British Museum.

Genus **HOMOPHOBERIA** Morr.

1875. Morr., Proc. Bost. Soc. N. H., XVIII, 125.

H. cristata Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 125, *Homophoberia*.

HABITAT.—Hoboken, New Jersey.

The species was described from the Sachs collection, and seems to be one of those unfortunate Hoboken forms that have not turned up again since their original description. I have no idea where the type is at present.

Genus **PHOBERIA** Hbn.

1816. Hbn., Verzeichniss, 267.

P. atomaris Hbn.*1818. Hbn., Zuträge, I, 16, ff. 75, 76, *Phoberia*.1816. Hbn., Verzeichniss, 268, *Phoberia*.1858. Wlk., C. B. Mus., Het., XIV, 1421, ♀ *Ophiusa*.

1880. Grt., Can. Ent., XII, 86, *Poaphila*.
orthosioides Gn.

1852. Gn., Spec. Gen., Noct., III, 296, pl. 23, f. 1, *Lyssia*.

1858. Wlk., C. B. Mus., Het., XIV, 1421, pr. syn.

1880. Grt., Can. Ent., XII, 86, pr. syn.
forrigens Wlk.

1858. Wlk., C. B. Mus., Het., XIV, 1474, *Poaphila*.*ingenua* Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1472, *Poaphila*.

HABITAT.—Eastern, Middle, Central, and Southern States; Massachusetts and New York in April and May; Texas in March.

Types of the Guenée and Walker species are in the British Museum, and are all more or less distinctly marked specimens of our common species.

P. indiscreta Hy. Edw.1886. Hy. Edw., Ent. Amer., II, 170, *Phoberia*.

HABITAT.—Kern County, California.

The type is in the Edwards collection. There may be some doubt of the correctness of the generic reference.

Genus **CELIPTERA** Gn.

1852. Gn., Spec. Gen., Noct., III, 308.

C. frustulum Gn.*1852. Gn., Spec. Gen., Noct., III, 308, *Celiptera*.1858. Wlk., C. B. Mus., Het., XIV, 1487, *Celiptera*.

discissa Wlk.1865. Wlk., C. B. Mus., Het., xxxiii, 1009, *Remigia*.1868. G. & R., Trans. Am. Ent. Soc., ii, 88, = *L. elongatus*.
elongatus Grt.1865. Grt., Proc. Ent. Soc. Phil., iii, 85, pl. 2, f. 6, *Litomitus*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., ii, 39, pr. syn.

HABITAT.—Canada; Eastern, Middle, Central, and Southern States; District of Columbia in August; Delaware in July.

Guenée's type is with M. Oberthür. The type of *discissa* is in the British Museum. Mr. Grote's type I have not seen.

C. bucetum Grt.1883. Grt., Trans. Kans. Ac. Sci., viii, 50, *Celiptera*.**HABITAT.**—New Mexico.

The type is with Prof. Snow.

Genus **FAGITANA** Wlk.

1865. Wlk., C. B. Mus., Het., xxxii, 645.

F. littera Gn.*1852. Gn., Spec. Gen., Noct., i, 71, *Leucania*.1856. Wlk., C. B. Mus., Het., ix, 77, *Mythimna*.1882. Grt., Ill., Essay, 41, *Pseudolimacodes*.*lucidata* Wlk.1865. Wlk., C. B. Mus., Het., xxxii, 645, *Fagitana*.*niveicostatus* Grt.1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 212, *Pseudolimacodes*.1875. Grt., Stett. Ent. Zeit., xxxvi, 199, *Pseudolimacodes*.

1882. Grt., Ill. Essay, 41, pr. syn.

HABITAT.—New York; Massachusetts in July; Florida; Illinois.

The Guenée and Walker types are in the British Museum. Mr. Grote's type I have not seen; but have seen a number of specimens named by him. Walker's species was described without locality and in such a way as to be not readily recognizable. As *Fagitana* has only the one species, it must be used in preference to Mr. Grote's generic term, under the rules. On the location of the genus I express no opinion. Guenée considers it *Leucaniid*. Mr. Grote places it in its present position on characters that seem valid to him.

Genus **PHURYS** Gn.

1852. Gn., Spec. Gen., Noct., iii, 303.

The genera in this series need revision. The differences between *Celiptera*, *Phurys*, and some species of *Poaphila* are difficult to make out; but I have in most cases left matters as they were, since any changes here could be only tentative and liable to further change on critical study. There are, also, a number of Verzeichniss genera that have not been applied, and which will probably have to be used to replace one or more of the terms adopted here. They are all indicated in the synonymy. The specific unions are all correct I believe,

P. vinculum Gn.*1852. Gn., Spec. Gen., Noct., III, 304, *Phurys*.1858. Wlk., C. B. Mus., Het., XIV, 1479, *Phurys*.**HABITAT.**—Georgia; Florida; Southern States.

The type is with M. Oberthür.

P. herbarum Gn.1852. Gn., Spec. Gen., Noct., III, 303, *Poaphila*.1858. Wlk., C. B. Mus., Het., XIV, 1471, *Poaphila*.
bifasciata Bates.1886. Bates, Can. Ent., XVIII, 94, *Celiptera*.1888. Bates, Can. Ent., XX, 100, = *vinculum*.**HABITAT.**—Southern States.

The type is with M. Oberthür. In the British Museum are specimens of both the above species, apparently named by Guenée and agreeing with his description. They are closely allied; but in *vinculum* the orbicular is present and the subterminal dotted line is distinct. The *vinculum* of the Grote collection and of American collections generally is the *herbarum* of Guenée according to these specimens, and I have accordingly cited *bifasciata* Bates to this species. Mr. Bates referred his species to *vinculum* on my authority, and what I knew as *vinculum* was what Mr. Grote had so named.

P. ovalis Grt.1883. Grt., Papilio, III, 75, *Phurys*.**HABITAT.**—Arizona.

The type is with Mr. Neumögen.

P. lima Gn.*1852. Gn., Spec. Gen., Noct., III, 305, *Phurys*.1858. Wlk., C. B. Mus., Het., XIV, 1479, *Phurys*.
obversa Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1473, *Poaphila*.
dissocians Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1477, *Poaphila*.**HABITAT.**—Southern States; New York.

Guenée's type is with M. Oberthür. The specimens in the Grote collection agree with those so named in the British Museum, apparently by Guenée. The Walker types are both in the Museum and are like the Grote specimens of *lima*: *dissocians* was described without locality.

P. bistrigata Hbn.1818. Hbn., Zuträge, I, 21, f. 111, 112, *Ptichodes*.1816. Hbn., Verzeichniss, 338, *Ortholitha*.1852. Gn., Spec. Gen., Noct., III, 303, *Poaphila*.1858. Wlk., C. B. Mus., Het., XIV, 1471, *Poaphila*.1880. Grt., Can. Ent., XII, 87, *Poaphila*.1882. Grt., New List, 41, *Phurys*.**HABITAT.**—Georgia.

I am not aware that this species has been positively identified in American collections. I have not seen it myself.

P. perspicua* Wlk.

1858. Wlk., C. B. Mus., Het., XIV, 1477, *Poaphila*.
glans Grt.

1875. Grt., Proc. Bost. Soc. N. H., XVIII, 416, *Phurys*.

HABITAT.—Florida.

The types are in the British Museum, and refer to one species only. *Perspicua* was described from locality unknown; but the specimen is probably from Doubleday's Florida material.

Genus **POAPHILA** Gn.

1852. Gn., Spec. Gen., Noct., III, 299.

P. quadrifilaris* Hbn.

1823. Hbn., Zutræge, III, 37, f. 569, 570, *Agnomonis*.

1852. Gn., Spec. Gen., Noct., III, 300, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1469, *Poaphila*.

1880. Grt., Can. Ent., XII, 118, *Poaphila*.

HABITAT.—New York in May and June, southward to Florida; Massachusetts in June.

P. deleta* Gn.

1852. Gn., Spec. Gen., Noct., III, 300, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1469, *Poaphila*.
obsoleta Grt.

1876. Grt., Check List, Noct., 42, *Poaphila 4-filaris* var.

1882. Grt., New List, 41, sp. dist.

HABITAT.—Southern States.

Types of Guenée's species are in both the London and Paris Museums, and are like the type of *obsoleta* in the British Museum. Mr. Grote based his name *obsoleta* on what he identified as Guenée's var. *a*, of *P. quadrifilaris*, and misidentified *deleta*. The *deleta* of the Grote collection is the *contempta* Bdv., as identified by Guenée. It is probable that this error is repeated in all the American collections deriving their determinations through Mr. Grote.

***P. contempta* Bdv.**

1852. Bdv., in Gn., Spec. Gen., Noct., III, 302, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1470, *Poaphila*.

HABITAT.—Georgia; Florida; Southern States.

The type is with Mr. Oberthür. As already stated, this is the *deleta* of the Grote collection.

P. sylvarum* Gn.

1852. Gn., Spec. Gen., Noct., III, 300, pl. XXIII, f. 2, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1469, *Poaphila*.

HABITAT.—Southern States.

The types were from the Boisduval collection and are probably with

M. Oberthür. A specimen, apparently determined by Guenée, is in the British Museum, and this agrees with the specimens so named in the Grote collection.

P. erasa Gn.

1852. Gn., Spec. Gen., Noct., III, 301, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1470, *Poaphila*.

HABITAT.—Southern States.

Typical specimens, named by Guenée, are in the British Museum and in the Jardin des Plantes, and with these the *erasa* of the Grote collection agrees; but the *herbicola* of the same collection is also *erasa*, and not the *herbicola* Bdv.

P. herbicola Bdv.*

1852. Gn., Spec. Gen., Noct., III, 301, *Poaphila*.

1857. Wlk., C. B. Mus., Het., XIV, 1417, *Poaphila*.

HABITAT.—Southern States.

The type is probably in the Oberthür collection. In the Jardin des Plantes at Paris is a specimen named *herbicola* by Guenée, which is very like *erasa* in habitus and maculation and seems to differ only in the much paler ground color. It is much paler than the *herbicola* of the Grote collection; but it is not at all unlikely that intermediate specimens will be found and that *herbicola* is a washed-out *erasa*.

P. flavistriaria Hbn.

1823. Hbn., Zuträge, III, f. 555, 556, *Crochiphora*.

1852. Gn., Spec. Gen., Noct., III, 303, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1470, *Poaphila*.

1880. Grt., Can. Ent., XII, 118, *Poaphila*.

HABITAT.—Southern States.

P. pacalis Wlk.

1858. Wlk., C. B. Mus., Het., XIV, 1475, *Poaphila*.

irrorata Grt.

1878. Grt., Bull. Geol. Surv., IV, 185, *Poaphila*.

HABITAT.—Florida.

The types are both in the British Museum, and are undoubtedly the same, specifically.

P. placata Grt.

1878. Grt., Bull. Geol. Surv., IV, 184, *Poaphila*.

HABITAT.—Georgia.

I have not seen the type, nor do I know where it is.

P. perplexa Bdv.

1852. Bdv., in Gn., Spec. Gen., Noct., III, 302, *Poaphila*.

1858. Wlk., C. B. Mus., Het., XIV, 1470, *Poaphila*.

HABITAT.—Georgia.

A type specimen is in the Paris Museum. It is a *Phurys*, allied to *herbarum*, with the t. a. line and subterminal spots wanting. I am not certain that I have seen just this form in American collections.

P. revoluta Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1472, 1835, *Poaphila*.**HABITAT.**—United States.

The type is not in the British Museum, or at all events I failed to find it. The label is there; but no specimen. It is probably at Oxford, in the Saunders collection.

P. turbata Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1834, *Poaphila*.**HABITAT.**—East Florida.

The type in the British Museum is a poor, faded specimen of a *Perigea*. There is a whitish powdered reniform and a punctiform white t. p. line. It looks familiar enough, yet I felt afraid to identify it with any of the species in the Museum Collection, and am not positive that it can ever be certainly identified.

Genus **PARALLELIA** Hbn.

1816. Hbn., Verzeichniss, 269.

P. bistriaris Hbn.*1818. Hbn., Zutræge, 1, 15, f. 63, 64, *Parallelia*.1816. Hbn., Verzeichniss, 269, *Parallelia*.1852. Gn., Spec. Gen., Noct., III, 268, *Ophiusa*.1858. Wlk., C. B. Mus., Het., XIV, 1420, *Ophiusa*.

1870. Saund., Can. Ent., II, 130, larva.

1880. Grt., Can. Ent., XII, 86, *Parallelia*.

1883. Hy. Edw., Papilio, III, 136, larva.

amplissima Wlk.1858. Wlk., C. B. Mus., Het., XIV, 1473, *Poaphila*.

1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.

HABITAT.—Nova Scotia to Florida, west to Colorado; Canada, June and July; New York, June to August; New Jersey, May and June; District of Columbia in May; Kansas in May.

The Walker type is in the British Museum.

Genus **AGNOMONIA** Hbn.

1823. Hbn., Zutraege, III, 10.

A. anilis Dru.*1797. Drury, Illustr., II, 21, pl. 12, f. 3, *Noctua*.1816. Hbn., Verzeichniss, 252, *Argyrostromis*.1852. Gn., Spec. Gen., Noct., III, 273, *Agnomonis*.1858. Wlk., C. B. Mus., Het., XIV, 1437, *Agnomonis*.*sesquistriaris* Hbn.1823. Hbn., Zutræge, III, 10, f. 419, 420, *Agnomonis*.

1852. Gn., Spec. Gen., Noct., III, 273, pr. syn.

HABITAT.—Middle and Southern states; Texas, April to June; Missouri in August.

Genus **PALINDIA** Gn.

1852. Gn., Spec. Gen., Noct., II, 274.

P. dominicata Gn.1852. Gn., Spec. Gen., Noct., II, 276, pl. XI, f. 1, *Palindia*.1857. Wlk., C. B. Mus., Het., XII, 846 *Palindia*.1879. Grt., No. Amer. Ent., I, 13, *Palindia*.**HABITAT.**—Texas; South America.

I do not know where the type is at present.

Genus **SIAVANA** Wlk.

1857. Wlk., C. B. Mus., Het., XIII, 1009,

S. repanda Wlk.*1858. Wlk., C. B. Mus., Het., XIII, 1009, *Siavana*.*auripennis* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 126, *Harreya*.**HABITAT.**—Southern States; Kentucky; Florida.

The Walker type is in the British Museum. The Grote type I have not seen, the specimen in the British Museum not being such. Mr. Grote for some reason never listed this Walker species, though Florida is given as the locality and the description is not entirely inapplicable.

Genus **PANAPODA** Gn.

1852. Gn., Spec. Gen., Noct., III, 324.

P. rufimargo Hbn.*1818. Hbn., Zutrüge, I, 13, ff. 45, 46, *Phoberia*.1852. Gn., Spec. Gen., Noct., III, 324, *Panapoda*.1858. Wlk., C. B. Mus., Het., XIV, 1517, *Panapoda*.1878. Grt., Bull. Geol. Surv., IV, 184, *Panapoda*.1880. Grt., Can. Ent., XII, 85, *Panapoda*.

1892. Beut., Bull. Am. Mus. N. H., IV, 69, larva.

rubricosta Gn.1852. Gn., Spec. Gen., Noct., III, 324, *Panapoda*.1858. Wlk., C. B. Mus., Het., XIV, 1517, *Panapoda*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 44, pr. syn.

1876. Grt., Check List Noct., 42, pr. syn.

1878. Grt., Bull. Geol. Surv., IV, 184, pr. syn.

1880. Grt., Can. Ent., XII, 85, pr. syn.

cressonii Grt.1863. Grt., Proc. Ent. Soc. Phil., I, 346, pl. III, f. 4, *Panapoda*.

1865. Wlk., C. B. Mus., Het., XXXIII, 1021, f pr. syn.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 44, pr. syn.

1878. Grt., Bull. Geol. Surv., IV, 184, pr. syn.

1880. Grt., Can. Ent., XII, 85, pr. syn.

var. *carneicosta* Gn.*1852. Gn., Spec. Gen., Noct., III, 325, *Panapoda*.1858. Wlk., C. B. Mus., Het., XIV, 1517, *Panapoda*.

1891. Smith, List Lepid., 61, pr. var.

1892. Beut., Bull. Am. Mus. N. H., IV, 68, larva.

scissa Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 987, *Poaphila*.

1868. G. & R., Trans. Am. Ent. Soc., II, 88, *carneicosta*.
combinata Wlk.
 1858. Wlk., C. B. Mus., Het., XIV, 1436, *Ophiusa*.
 var. *roseicosta* Gn.
 1852. Gn., Spec. Gen., Noct., III, 325, *Panapoda*.
 1858. Wlk., C. B. Mus., Het., XIV, 1517, *Panapoda*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 44, pr. syn.
 1878. Grt., Bull. Geol. Surv., IV, 184, pr. syn.
 1880. Grt., Can. Ent., XII, 85, pr. syn.
 1882. Grt., New List, 41, pr. var.
 1889. Soule & Eliot, Psyche, V, 259, larva.

HABITAT.—Middle, Southern, and Central States, June to August; Texas, in March, April, and August.

The type of *rubricosta* is probably with M. Oberthür. I have not seen it. The type of *cressoni* I have not seen, nor do I know of its present whereabouts. The type of *carneicosta* is in the Jardin des Plantes, where I have seen it. It is the form in which the ordinary spots are black and distinct. The Walker types are in the British Museum and are both referable here. *Roseicosta* Gn., was described after a drawing by Abbot, and Guenée himself suspected its identity with *rubricosta*. I have not seen this figure, but do not doubt that the species belongs here.

Genus **PLEONECTYPTERA** Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 23.

P. pyralis Hbn.*

1818. Hbn., Zutrüge, I, 23, f. 127, 128, *Hemeroplanis*.
 1872. Grt., Trans. Am. Ent. Soc., IV, 23, *Pleonectyptera*.
 1880. Grt., Can. Ent., XII, 87, *Pleonectyptera*.
irrecta Wlk.
 1865. Wlk., C. B. Mus., Het., XXXIV, 993, *Poaphila*.
floccalis Zell.
 1872. Zell., Verh. k. k. zööl. bot. Ges., XXII, 476, t. I, f. 10, *Coptocnemis*.
 1891. Smith, List Lepidoptera, 61, pr. syn.

HABITAT.—Middle, Southern and Central States; Texas.

The type of *irrecta* is in the British Museum. *Pyralis* Hbn., is the form with a rusty maculation on a bright yellow ground. The type of *floccalis* is in the Museum at Cambridge, where I have compared it with normal *pyralis*. Mr. Grote's genus has priority by two or three months, but the characterization fails to call attention to the interesting leg structure figured by Zeller.

P. geometralis Grt.*

1872. Grt., Trans. Am. Ent. Soc., IV, 24, *Pleonectyptera*.

HABITAT.—Alabama; Southern States; Florida in March.

The type is in the American Entomological Society's collection. The species is exactly like *pyralis* in maculation, but the bright yellow is replaced by a uniform rusty brown. But even in the type a yellowish suffusion is perceptible, and I am convinced that we have to do with forms of one species only.

P. habitalis Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 39, *Hypena*.
phalænalis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 24, *Pleonectyptera*.

HABITAT.—Alabama; Southern States.

Walker's type is in the British Museum; that of the Grote species is in the collection of the American Entomological Society. I have a specimen which has been compared with both types and agrees well with each of them. For a change, Mr. Grote's type is much the poorest and least recognizable.

P. historialis Grt.

1882. Grt., Can. Ent., xiv, 188, *Pleonectyptera*.

HABITAT.—Arizona.

The type is in the Neumøgen collection.

P. immaculalis Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., iii, 13, *Pleonectyptera*.

HABITAT.—Texas, in March, April, and July.

The type is in the British Museum.

P. obliquialis Hy. Edw.*

1886. Hy. Edw., Ent. Amer., ii, 171, *Pleonectyptera*.

HABITAT.—Texas.

The type is in the Edwards collection.

P. incusalis Grt.

1881. Grt., Can. Ent., xiii, 133, *Bomolocha*.

HABITAT.—Colorado; Arizona.

Types are in the British Museum and in the Edwards collection. I have seen both, and have carefully compared specimen. I can not understand the reference to *Bomolocha*, with which the species has nothing in common.

P. subflavidalis Grt.

1881. Grt., Papilio, i, 166, *Megachyta*.

HABITAT.—Arizona.

The type is with Mr. Neumøgen and is undoubtedly a *Pleonectyptera*.

Genus **REMIGIA** Gn.

1852. Gn., Spec. Gen., Noct., iii, 313.

R. latipes Gn.*

1852. Gn., Spec. Gen., Noct., iii, 314, *Remigia*.

1858. Wlk., C. B. Mus., Het., xiv, 1494, *Remigia*.

1869. Bethune, Can. Ent., i, 88, *Remigia*.

1869. H. Sch., Corr. Blatt, 1869, Cuba, 28, *Remigia*.

1885. Gundlach, Cont. Ent. Cub., 354, *Remigia*.

repanda? Bdv.

1834. Bdv., Fn. Ent. Madag., 107, 12, pl. xiii, f. 3, *Ophiusa*.

1852. Gn. Spec. Gen., Noct., III, 314, pr. syn.
punctularis † Bdv.
 1840. Bdv., Ind. Meth., 107, *Ophiusa*.
 1852. Gn., Spec. Gen., Noct., III, 314, pr. syn.
perlata Wlk.
 1858. Wlk., C. B. Mus., Het., XIV, 1480, *Phurys*.
indentata Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 282, *Remigia*.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 12, † pr. var.
texana Morr.
 1874. Morr., Proc. Bost., Soc. N. H., XVII, 219, † pr. var.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 12, pr. syn.
 1875. Morr., Proc. Ac. Nat. Sci. Phil., 1875, 71, an sp. dist.
disseverans Wlk.
 1858. Wlk., C. B. Mus., Het., XIV, 1495, *Remigia*.
 var. *marcida* Gn.*
 1852. Gn., Spec. Gen., Noct., III, 317, *Remigia*.
 1858. Wlk., C. B. Mus., Het., XIV, 1495, *Remigia*.
hexastylus Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 285, *Remigia*.

HABITAT.—Labrador to Florida, to Texas; east of the Rocky Mountains; Texas in March, September, October, November; Florida in August and March; Delaware in May.

A typical specimen of *latipes* is in the British Museum and is very nearly like the type of *indentata* Harv., which is in the same collection. The type of *Phurys perlata* is a better marked specimen of the same species, and the type of *disseverans* is the pale, almost immaculate form. The type of *hexastylus* Harvey is in the British Museum, and is exactly like the type of *marcida* in the Jardin des Plantes. It is a larger form of the ordinary species, I believe. The species, according to Guenée, is widely distributed on both sides of the equator.

Genus **TRAMA** Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 13.

T. detrahens Wlk.*

1858. Wlk., C. B. Mus., Het., XIV, 1834, *Poaphila*.
arrosa Harv.
 1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 13, *Trama*.

HABITAT.—Southern States; Florida in March; Texas in June and August; Mississippi.

The types are in the British Museum. The Walker type is a poor, worn example, but there is no doubt of its identity with Dr. Harvey's species.

T. hinna Geyer.*

1837. Geyer, Zutræge, v, 41, ff. 971, 972, *Acolasia*.
 1852. Gn., Spec. Gen., Noct., III, 216, *Bendis*.
 1858. Wlk., C. B. Mus., Het., XIV, 1339, *Bendis*.
 1881. Grt., Can. Ent., XIII, 92, *Acolasia*.
 1882. Grt., New List, 41, *Trama*.

HABITAT.—Georgia; Texas; Florida in March.

T. griseipennis Grt.1882. Grt., Can. Ent., xiv, 183, *Trama*.**HABITAT.**—Arizona.

The type is with Mr. Neumœgen.

Genus **EUTOREUMA** Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 21.

E. tenuis Grt. *1872. Grt., Trans. Am. Ent. Soc., iv, 22, *Eutoreuma*.**HABITAT.**—District of Columbia, in June and August; Alabama; Southern States; Texas, in August.

♂ and ♀ specimens, labelled "type," are in the collection of the American Entomological Society, and a "type" is also in the British Museum.

Genus **ISOGONA** Gn.

1852. Gn., Spec. Gen., Noct., iii, 323.

I. natatrix Gn.1852. Gn., Spec. Gen., Noct., iii, 323, *Isogona*.1858. Wlk., C. B. Mus., Het., xiv, 1516, *Isogona*.**HABITAT.**—North America.

The type is probably with M. Oberthür. So far as I am aware this species has not been identified in American collections. I have made no effort to apply the description, which seems to indicate an easily recognizable form.

Genus **CAPNODES** Gn.

1852. Gn., Spec. Gen., Noct., iii, 374.

C. californica Behr.1870. Behr, Trans. Am. Ent. Soc., iii, 23, *Capnodes*.**HABITAT.**—California.

I have not seen this species, and have not at present any idea what it can be.

Genus **ANTICARSIA** Hbn.

1816. Hbn., Verzeichniss, 340.

A. gemmatilis Hbn. *1818. Hbn., Zutræge, i, 26, f. 153, 154, *Anticarsia*.1816. Hbn., Verzeichniss, 340, *Anticarsia*.1852. Gn., Spec. Gen., Noct., iii, 355, *Thermesia*.1858. Wlk., C. B. Mus., Het., xiv, 1560, *Thermesia*.1879. Grt., Can. Ent., xi, 179, *Anticarsia*—varieties.1880. Grt., No. Amer. Ent., i, 103, varieties, *Anticarsia*.1880. Grt., Can. Ent., xii, 86, *Anticarsia*.**HABITAT.**—Wisconsin; Texas, in October; Central and Southern States.

A good series of specimens is in the British Museum.

Genus **ANTIBLEMMA** Hbn.

1816. Hbn., Verzeichniss, 341.

A. inexacta Wlk.*1865. Wlk., C. B. Mus., Het., xxxiii, 1038, *Thermesia*.
canalis Grt.1874. Grt., Bull. Bkln. Ent. Soc., II, 76, *Antiblemma*.1878. Grt., Bull. Geol. Surv., IV, 185, *Antiblemma*.

HABITAT.—New York; Middle, Central, and Southern States.

The types are both in the British Museum.

A. guttula Hy. Edw.1882. Hy. Edw., Papilio, II, 129, *Antiblemma*.

HABITAT.—Georgia.

The type is in the Edwards collection.

Genus **AGASSIZIA** Behr.

1870. Behr, Trans. Am. Ent. Soc., III, 23.

A. urbicola Behr.1870. Behr, Trans. Am. Ent. Soc., III, 23, *Agassizia*.

HABITAT.—California.

I have seen no authentically named specimen of this species. Mr. Edwards told me, some years ago, that Dr. Behr had described a species of *Homopyralis* under the above name, but he was unwilling to make any positive statements in the matter.

Genus **EREBUS** Latr.

1810. Latr., Consid. gen. des Ins. et Crust., 365.

E. odora Linn.*1758. Linn., Syst. Nat., ed. x, 505, *Bombyz*.1764. Linn., Mus. Lud. Ulr., 374, *Attacus*.1764. Clk., Icones, t. 50, f. 1, *Phalæna*.1767. Linn., Syst. Nat., ed. XII, II, 811, *Attacus*.1770. Drury, Illustr., I, pl. III, f. 1, *Phalæna*.1779. Cram., Pap. Exot., II, 111, t. 169, f. A. B, *Phalæna*.1781. Fabr., Spec. Ins., II, 210, *Noctua*.1787. Fabr., Mant. Ins., II, 135, *Noctua*.1788. Gmel., ed. XIII, Linn. Syst. Nat., 2528, *Noctua*.1794. Fabr., Ent. Syst., III, 2, 10, *Noctua*.1805. Beauv., Ins. Afr. and Am., pl. XXIII, f. 1, *Noctua*.1811. Oliv., Encycl. Meth., VIII, 252, pl. 84, f. 2, *Erebus*.1816. Hbn., Samml. Ex. Schmett., II, pl. 419, *Otosema*.1816. Hbn., Verzeichniss, 273, *Otosema*.1837. Wetw., ed. Dru., I, 6, pl. III, f. 1, *Erebus*.1852. Gn., Spec. Gen., Noct., III, 167, *Erebus*.1856. Lucas, in Sagra's Cuba, 308, *Erebus*.1858. Wlk., C. B. Mus., Het., XIV, 1290, *Erebus*.1869. H. Sch., Corr. Blatt, 1869, Cuba, 30, *Erebus*.1869. Bethune, Can. Ent., I, 88, *Erebus*.1870. Behr, Trans. Am. Ent. Soc., III, 23, *Erebus*.

1885. Gundlach, Cont. Ent. Cub., 367, *Erebus*.
 1887. Fernald, Ent. Amer., III, 78, larva.
agarista Cram.
 1779. Cram., Pap. Ex., II, 15, t. 170, f. A, B, *Phalena*.
 1788. Gmel., ed. Linn. Syst. Nat., 2529, pr. syn.

HABITAT.—Canada to Florida; Colorado; California; usually in isolated specimens, and late in fall in the Northern States.

Genus **THYSANIA** Dalm.

1824. Dalman, Kongl. Vetensk. Acad. Handlingar, 1824, 407.

T. xenobia Cram.*

1779. Cram., Lep. Exot., II, 27, pl. 115, ff. A. B., *Bombix*.
 1781. Fabr., Spec. Ins., II, 209, *Noctua*.
 1782. Drury Illustr., III, 39, f. 1, 2, *Bombix*.
 1787. Fabr., Mant. Ins., II, 135, *Noctua*.
 1788. Gmel., ed. XIII, Linn. Syst. Nat., 2529, *Noctua*.
 1794. Fabr., Ent. Syst., III, 2, 8, *Noctua*.
 1811. Oliv., Enc. Meth., VIII, 251, pl. 84, f. 1, *Noctua*.
 1816. Hbn., Verzeichniss, 273, *Syrnia*.
 1849. Westw., ed. Dru., III, 53, pl. 39, ff. 1, 2, *Erebus*.
 1852. Gn., Spec. Gen., Noct., III, 163, *Thysania*.
 1856. Lucas, in Sagra's Cuba, 308, *Thysania*.
 1858. Wlk., C. B. Mus., Het., XIV, 1287, *Thysania*.
 1869. H. Sch., Corr. Blatt, 1869, Cuba, 30, *Thysania*.
 1885. Gundlach, Cont. Ent. Cub., 366, *Thysania*.

HABITAT.—Florida; Southern States; occasional northward; Colorado.

Letis specularis Hbn., is hardly a North American species. It may have been occasionally found on our shores or within our boundaries; but I do not believe it a native entitled to be listed as a member of our fauna.

Genus **ZALE** Hbn.

1816. Hbn., Verzeichniss, 275.

Z. horrida Hbn.*

1818. Hbn., Zuträge, I, 11, ff. 31, 32, *Zale*.
 1816. Hbn., Verzeichniss, 275, *Zale*.
 1858. Wlk., C. B. Mus., Het., XIV, 1457, † *Drasteria*.
 1880. Grt., Can. Ent., XII, 85, *Zale*.
calycanthata † Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1054, *Homoptera*.
 1865. Beth., Can. Journal, X, 251, *Homoptera*.
 1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
 1880. Grt., Can. Ent., XII, 85, pr. syn.

HABITAT.—Northern States, May and June; Texas, March and August; United States east of the Plains.

The specimen of *calycanthata* labeled by Walker is still in the British Museum collection and is as above referred,

Genus **PHÆOCYMA** Hbn.
1816. Hbn., Verzeichniss, 275.

P. lunifera Hbn. *

1818. Hbn., Zutræge, 19, f. 97, 98, *Phæocyma*.
1816. Hbn., Verzeichniss, 275, *Phæocyma*.
1852. Gn., Spec. Gen., Noct., III, 3, pl. 15, f. 9, *Phæocyma*.
1857. Wlk., C. B. Mus., Het., XIII, 1045, *Phæocyma*.
1865. Bethune, Canadian Journal, x, 249, *Phæocyma*.
1878. Grt., Bull. Geol. Surv., IV, 185, *Pheocyma*.
1880. Grt., Can. Ent., XII, 87, *Pheocyma*.
lineosa Wlk.
1857. Wlk., C. B. Mus., Het., XIII, 1056, *Homoptera*.
1865. Bethune, Canadian Journal, x, 259, *Homoptera*.

HABITAT.—New York to Texas, to Illinois; Middle, Central, and Southern States; Colorado; Kansas; Texas in August.

Walker's type is in the British Museum, and is the species identified, correctly I think, as *lunifera* by Mr. Grote.

P. umbrina Grt.

1883. Grt., Can. Ent., xv, 3, *Pheocyma*.
1883. Grt., Can. Ent., xv, 123, *Ypsia*.

HABITAT.—Arizona.

The type is in the Neumœgen collection.

P. termina Grt.

1883. Grt., Can. Ent., xv, 129, *Pheocyma*.

HABITAT.—Arizona.

The type is in the Neumœgen collection.

Genus **HOMOPTERA** Bdv.
1829. Bdv., Icon. Regn. Anim.

H. lunata Dru. *

1770. Drury, Illustr., I, 40, pl. 20, f. 3, *Noctua*.
1782. Cram., Pap. Ex., IV., 38, pl. 308, f. C., *Phalæna*.
1830. Westw., ed. Dru., I, 37, pl. 20, f. 3, *Erebus*.
1852. Gn., Spec. Gen., Noct., III, 12, *Homoptera*.
1857. Wlk., C. B. Mus., Het., XIII, 1053, *Homoptera*.
1865. Bethune, Canadian Journal, x, 252, *Homoptera*.
1877. Bean, Can. Ent., IX, 174, 228, = *edusa*.
1882. French, Can. Ent., XIV, 131, life hist.
var. *edusa* Dru. *
1773. Drury, Illustr., II, pl. 24, f. 4, *Noctua*.
1830. Westw., ed. Drury, II, 46, pl. 24, f. 4, *Erebus*.
1852. Gn., Spec. Gen., Noct., III, 14, *Homoptera*.
1857. Wlk., C. B. Mus., Het., XIII, 1054, *Homoptera*.
1865. Bethune, Canadian Journal, x, 9, *Homoptera*.
1877. Bean, Can. Ent., IX, 174, 228, *Homoptera*.
1878. Lint., Ent. Cont., IV, 108, pr. syn.
putrescens Guer.
1829. Guer., Icon. Regne Anim., pl. 89, *Homoptera*.

1852. Gn., Spec. Gen., Noct., III, 14, = *edusa*, larva.
sawandersii Beth.
 1864. Beth., Proc. Ent. Soc., Phil., IV, 215, *Homoptera*.
 1865. Beth., Canadian Journal, x, 257, *Homoptera*.
 1877. Bean, Can. Ent., IX, 174, pr. syn.
 1878. Lint., Ent. Cont., IV, 109, † pr. syn.
viridans Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1064, *Homoptera*.
quadriplagiata Wlk.
involuta Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1055, *Homoptera*.
 1865. Bethune, Canadian Journal, x, 253, *Homoptera*.

HABITAT.—Canada, May, June, and September; Texas to California, May and June; August to November in northern and eastern range; Texas in March, May, and October; United States generally.

The Walker types are all in the British Museum and all refer to the *edusa* form, *viridans* representing the darker specimens. Walker cites to *viridans*, *H. viridus* Gn., III, 13, described from South America, and refers both with a question to *lunata* Cram. I have not seen Guenée's type, and therefore cite Walker's name only in the synonyms. I can not find any description of *H. quadriplagiata*, but there may be such.

***H. nigricans* Beth.**

1864. Bethune, Proc. Ent. Soc., Phil., IV, 214, *Homoptera*.
 1865. Bethune, Canadian Journal, x, 252, *Homoptera*.

HABITAT.—Canada, August; Middle and Northern States.

The type is probably with Dr. Bethune.

***H. rosæ* Behr.**

1870. Grt., Trans. Am. Ent. Soc., III, 28, *Homoptera*.

HABITAT.—California.

I have not seen the type.

H. rubi* Edw.

1881. Hy. Edw., Papilio, I, 28, *Homoptera*.

HABITAT.—California; Arizona.

Types are in the Edwards collection.

H. minerea* Gn.

1852. Gn., Spec. Gen., Noct., III, 15, pl. 18, f. 6, *Homoptera*.
 1857. Wlk., C. B. Mus., Het., XIII, 1054, *Homoptera*.
 1865. Bethune, Canadian Journal, x, 254, *Homoptera*.
obliqua † Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1054, *Homoptera*.
 1868. Grt. & Rob., Trans. Am. Ent. Soc., II, 79, pr. syn.

HABITAT.—Canada; North America in May and June; Middle, Central, and Southern States.

I have not seen the type which is in the Oberthür collection; but the figure is unmistakable. The specimen named *minerea* in the British

Museum is a small form of *lunata*, with much blue powdering. A specimen similar to it from Dr. Bailey, Center, N. Y., is in the Grote collection, without specific name.

H. calycanthata* S. & A.

1797. S. & A., Ins. Ga., II, 207, pl. 104, *Phalæna*.

1816. Hbn., Verzeichniss, 275, *Phaocyma*.

1852. Gn., Spec. Gen., Noct., III, 15, *Homoptera*.

HABITAT.—Canada in May; Massachusetts in May and June; Illinois in August; New York and southward to Florida and Texas; Portland, Oregon, April and May; Colorado.

H. cingulifera* Wlk.

1857. Wlk., C. B. Mus., Het., XIII, 1056, *Homoptera*.

intenta Wlk.

1857. Wlk., C. B. Mus., Het., XIII, 1070, *Homoptera*.

woodii Grt.

1877. Grt., Can. Ent., IX, 88, *Homoptera*.

HABITAT.—Massachusetts in July; New York to Florida; Central States; Wisconsin.

The types of all the names are in the British Museum, and all refer to this one, very distinct species.

***H. salicis* Behr.**

1872. Behr, Trans. Am. Ent. Soc., III, 28, *Homoptera*.

HABITAT.—California.

The type is probably with Dr. Behr. I do not know the species.

***H. albofasciata* Beth.**

1865. Bethune, Canadian Journal, X, 256, *Homoptera*.

HABITAT.—Canada in May and June.

The type is probably with Dr. Bethune.

H. edusina* Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 14, *Homoptera*.

atritincta Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 14, *Homoptera*.

1878. Grt., Bull. Geol. Surv., IV, 185, = ♀ prec.

HABITAT.—Texas, February, March, and May.

The types are in the British Museum, and refer to one species without much doubt. I am not so sure that the differences between them are sexual; but believe that males and females of both forms occur,

***H. galbanata* Morr.**

1875. Morr., Proc. Ac. Nat. Sci., Phil., 1875, 435, *Homoptera*.

HABITAT.—Nebraska.

I have no information concerning the type of this species,

H. uniformis Morr.1875. Morr., Can. Ent., VII, 148, *Homoptera*.**HABITAT.**—Georgia.

The type is in the Tepper collection.

H. cinerea Morr.1875. Morr., Can. Ent., VII, 148, *Homoptera*.**HABITAT.**—Massachusetts.

I have no information as to the type of this species.

H. penna Morr.1875. Morr., Proc. Bost. Soc. N. H., XVIII, 241, *Homoptera*.1878. Grt., Bull. Geol. Surv., IV, 185, *Phocoryma*.**HABITAT.**—Illinois; Middle and Central States.

I have not seen the type.

H. unilineata Grt.*1876. Grt., Can. Ent., VIII, 108, *Homoptera*.1883. Grt., Can. Ent., XV, 123, *Homoptera*.**HABITAT.**—Canada; Eastern, Middle and Central States, May; District of Columbia in April.

The type is in the British Museum.

H. obliqua Gn.*1852. Gn., Spec. Gen., Noct., III, 16, pl. xv, f. 7, *Homoptera*.**HABITAT.**—Middle, Eastern and Central States, May and June.The type is probably with M. Oberthür. The British Museum specimen is a rubbed *lunata*, and does not agree with Guenée's figure. In the Grote collection there are specimens which are, I believe, correctly determined.**H. duplicata** Beth.*1856. Bethune, Canadian Journal, x, 257, *Homoptera*.**HABITAT.**—Canada; Northern and Middle States; Washington in September.

The type is probably with Dr. Bethune.

H. benesignata Harv.1875. Harv., Bull. Buff. Soc. Nat. Sci., III, 14, *Homoptera*.**HABITAT.**—Canada.

The type is in the British Museum.

H. declarans Wlk.1857. Wlk., C. B. Mus., Het., XIII, 1057, *Homoptera*.**HABITAT.**—"East Florida."The type in the British Museum looks very much like a *Ph. lunifera*, with very pale ground color, distinct dark basal space, and black reni-

form. The two exterior lines are close together, distinct, the intervening space distinctly yellow. It is not in the Grote collection and seems a good species.

Genus **CAMPOMETRA** Gn.
1852. Gn., Spec. Gen., Noct., III, 25.

C. amella Gn.

1852. Gn., Spec. Gen., Noct., III, 25, pl. 18, f. 8, *Campometra*.

1857. Wlk., C. B. Mus., Het., XIII, 1084, *Campometra*.

HABITAT.—Georgia.

The type is with M. Oberthür. I am not aware that this species has been identified in American collections. The figure represents a very familiar-looking form; but I have not tried to apply it. In the Neumögen collection Mr. Grote has suggested its identity with *Eubolina stylobata*, and perhaps that is correct.

Genus **EUBOLINA** Harv.
1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 281.

E. impartialis Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 281, *Eubolina*.

HABITAT.—Texas in July.

The type is in the British Museum. I have a compared specimen.

E. integerrima Wlk.*

1857. Wlk., C. B. Mus., Het., XIII, 1057, *Homoptera*.
stylobata Harv.

1876. Harv., Can. Ent., VIII, 155, *Homoptera*.

1882. Grt., New List, 42, *Eubolina*.

HABITAT.—Texas in May and June; East Florida; Colorado.

Both types are in the British Museum, and refer without doubt to one species only.

E. mima Harv.*

1876. Harv., Can. Ent., VIII, 155, *Homoptera*.

1882. Grt., New List, 42, *Eubolina*.

HABITAT.—Texas; Colorado; Arizona.

The type is in the British Museum.

E. meskei Hy. Edw.*

1882. Hy. Edw., Papilio, II, 128, *Eubolina*.

HABITAT.—Texas.

The type, from the Meske collection, is in the U. S. National Museum.

Genus **YPSIA** Gn.
1852. Gn., Spec. Gen., Noct., III, 16.

Y. undularis Dru.*

1770. Drury, Illustr., I, pl. IX, f. 4, *Noctua*.

1816. Hbn., Verzeichniss, 275, *Anthraxia*.

1852. Gn., Spec. Gen., Noct., III, 18, *Ypsia*.

1857. Wlk., C. B. Mus., Het., XIII, 1074, *Ypsia*.
 var. *æruginea* Gn.*
 1852. Gn., Spec. Gen., Noct., III, 17, pl. XVIII, f. 7, *Ypsia*.
 1857. Wlk., C. B. Mus., Het., XIII, 1074, *Ypsia*.
 1865. Bethune, Canadian Journal, x, 259, *Ypsia*.
 1878. Grt., Bull. Geol. Surv., IV, 185, *Ypsia*.
 1883. Grt., Papilio, III, 73, pr. syn.
plenipennis Wlk.
 1857. Wlk., C. B. Mus., Het., XIII, 1055, *Homoptera*.
 var. *umbripennis* Grt.*
 1877. Grt., Can. Ent., VIII, 109, *Homoptera*.

HABITAT.—Canada and Northern States, May, June, and August, to Florida; Colorado.

The Walker types are in the British Museum. A type of *æruginea* is in the Jardin des Plantes, agreeing with the identification in American collections.

Genus **PSEUDANTHRACIA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 46.

P. coracias Gn.*

1852. Gn., Spec. Gen., Noct., III, 19, *Anthracia*.
 1857. Wlk., C. B. Mus., Het., XIII, 1075, = *squamularis*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 46, *Pseudanthracia*.
squamularis, Dru.
 1770. Drury, Illustr., I, 18, pl. IX, f. 3, *Noctua*.
 1857. Wlk., C. B. Mus., Het., XIII, 1075, *Anthracia*.
 1865. Bethune, Canadian Journal, x, 248, *Anthracia*.
 1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 46, † pr. syn.

HABITAT.—Canada to Florida; Central States; New Mexico; Texas in March and December.

The above is the synonymy given by Mr. Grote, who seems to doubt the correctness of Walker's reference. I have made no attempt to get at the truth myself, and give the bibliography as I find it. I have not seen Guenée's type. The *squamularis* of the British Museum collection (Walker) is *Ypsia undularis*.

P. cornix Gn.

1852. Gn., Spec. Gen., Noct., III, 19, pl. xv, f. 8, *Anthracia*.
 1857. Wlk., C. B. Mus., Het., XIII, 1075, *Anthracia*.
 1865. Bethune, Canadian Journal, x, 249, *Anthracia*.

HABITAT.—North America.

The species was described from the Boisduval collection, and the type is probably with M. Oberthür.

Genus **SELENIS** Gn.

1852. Gn., Spec. Gen., Noct., III, 361.

S. monotropa Grt.*

1876. Grt., Can. Ent., VIII, 207, *Selenis*.

HABITAT.—Texas.

The type is in the British Museum.

Genus **YRIAS** Gn.

1852. Gn., Spec. Gen., Noct., III, 21.

Y. clientis Grt.*1882. Grt., Can. Ent., XIV, 236, *Yrias*.**HABITAT.**—Arizona.

Types are in the Neumœgen collection and in the National Museum.

Y. volucris Grt.1883. Grt., Can. Ent., XV, 3, *Yrias*.**HABITAT.**—Arizona.

The type is with Mr. Neumœgen.

Y. repentis Grt.*1881. Grt., Papilio, I, 165, *Homopyralis*.1882. Grt., Can. Ent., XIV, 234, *Yrias*.**HABITAT.**—Arizona.

The type is with Mr. Neumœgen.

Y. crudelis Grt.*1882. Grt., Can. Ent., XIV, 237, *Yrias*.**HABITAT.**—Arizona; Texas, in March; California.

A type is with Mr. Neumœgen; another in the National Museum.

Genus **HOMOPYRALIS** Grt.

1874. Grt., Proc. Ac. Nat. Sci. Phil., 213.

H. discalis Grt.*1876. Grt., Can. Ent., VIII, 206, *Homopyralis*.**HABITAT.**—Canada; Northern, Middle and Central States; New Mexico; June to August in New York.

The type is in the British Museum.

H. contracta Wlk.*1860. Wlk., Can. Nat. and Geol., V, 258, *Homoptera*.1865. Bethune, Canadian Journal, X, 258, *Homoptera*.1877. Grt., Can. Ent., IX, 28, = *Homopyralis tactus*.*zonata* Wlk.1865. Wlk., C. B. Mus., Het., XXXIII, 878, *Homoptera*.*tactus* Grt.1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 213, *Homopyralis*.

1877. Grt., Can. Ent., IX, 28, pr. syn.

HABITAT.—Canada to Florida, to Texas; northern range in June and July; District of Columbia in August; Delaware in June.

The types of *zonata* and *tactus* are in the British Museum, and these are undoubtedly alike, specifically. Mr. Grote refers *contracta* positively to *tactus*, but continues to use his own specific name. The type of *contracta* is in the collection of the Entomological Society of Ontario.

H. tantillus Grt.*

1874. Grt., Proc. Ac. Nat. Sci. Phil., 1874, 214, *Homopyralis*.

HABITAT.—New York to Texas; Central States; Florida in March; Texas, March to July, and October.

The type is in the British Museum.

H. miserulata Grt.

1882. Grt., Can. Ent., xiv, 185, *Homopyralis*.

1883. Grt., Can. Ent., xv, 123, *Homopyralis*.

HABITAT.—New Mexico.

The type is in the Neumægen collection.

Genus **MATIGRAMMA** Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 22.

M. pulverilinea Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 22, *Matigramma*.

HABITAT.—Southern States; Texas in March, April, June, and September.

A type is in the British Museum; another in the collection of the American Entomological Society.

M. pulverosa Wlk.

1865. Wlk., C. B. Mus., Het., xxxiii, 994, *Poaphila*.
lena Harv.

HABITAT.—Texas in March, May, and July.

Both the types are in the British Museum; but I have not succeeded in finding a description of *M. lena*. I presume such exists, for the species is correctly known in American collections; but I have not seen it.

M. rubrosuffusa Grt.

1882. Grt., Can. Ent., xiv, 172, *Matigramma*.

1883. Grt., Can. Ent., xv, 123, *Matigramma*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

Genus **ARGILLOPHORA** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 124.

A. furcilla Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 124, *Argillophora*.

HABITAT.—Alabama.

The type is in the British Museum. It is an odd species, which I had never before seen.

Genus **HYAMIA** Wlk.

1858. Wlk., C. B. Mus., Het., xvi, 72.

H. perditalis Wlk.*1858. Wlk., C. B. Mus., Het., xvi, 234, *Hyamia*.*semilineata* Wlk.1865. Wlk., C. B. Mus., Het., xxxiii, 1102, *Legna*.*umbrifascia*, Grt.1873. Grt., Trans. Am. Ent. Soc., iv, 301, *Spargaloma*.

HABITAT.—Massachusetts in July; Middle States to Texas; New Mexico; District of Columbia in August; Texas in May and June.

The types are all in the British Museum. It is possible that *Hyamia* may have another type, not congeneric with *perditalis*. In that case *Legna* must be used, as the type and only species is *semilineata*. *Spargaloma* Grt., is antedated in any case. *H. perditalis* is from "locality unknown," but is evidently this species.

H. sexpunctata Grt.*1873. Grt., Trans. Am. Ent. Soc., iv, 300, pl. i, f. 90, *Spargaloma*.

HABITAT.—Massachusetts in July; Middle States to Texas; New Mexico.

The type is in the British Museum.

H. punctipennis Grt.1883. Grt., Can. Ent., xv, 122, *Spargaloma*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

Genus **HEXERIS** Grt.

1875. Grt., Can. Ent., vii, 176.

H. enhydris Grt.1875. Grt., Can. Ent., vii, 176, *Hexeris*.

HABITAT.—Florida.

A very distinct form, the type of which is in the British Museum. I had not seen it previously.

Genus **SYLECTRA** Hbn.

1816. Hbn., Verzeichniss, 341.

S. erycata Cram.1782. Cram., Pap. Exot., iii, 170, pl. 287, f. D, E, *Phalæna*.1782. Cram., Pap. Exot., iv, 157, pl. 370, f. E., *Phalæna*.1802. Latr., Gen. Crust. et Ins., iv, 228, *Herminia*.1816. Hbn., Verzeichniss, 342, *Sylectra mirandalis*.1852. Gn., Spec. Gen., Noct., iii, 340, *Teratocera*.1858. Wlk., C. B. Mus., Het., xiv, 1542, *Teratocera*.1864. Grt., Proc. Ent. Soc. Phil., ii, 441, *Sylectra*.*mirandalis* Hbn.1816. Hbn., Verzeichniss, 342, *Sylectra*.

HABITAT.—New York; Florida; Gulf States, southward.

A peculiar tropical form which has lost its way, apparently.

Hübner, in the Verzeichniss, cites *erycata* Cram., as a synonym to *mirandalis*—*Salia egregia mirandalis*—without explanation or reference to any description of his species.

Genus **PANGRAPTA** Hbn.

1816. Hbn., Verzeichniss, 343.

P. decoralis Hbn. *

1818. Hbn., Zuträge, I, 18, ff. 93, 94, *Pangrapta*.

1816. Hbn., Verzeichniss, 343, *Pangrapta*.

1872. Grt., Trans. Am. Ent. Soc., IV, 91, *Pangrapta*.

geometroides Gn.

1852. Gn., Spec. Gen., Noct., III, 371, *Marmorinia*.

1858. Wlk., C. B. Mus., Het., XIV, 1598, *Marmorinia*.

epionoides Gn.

1852. Gn., Spec. Gen., Noct., III, 371, *Marmorinia*.

1858. Wlk., C. B. Mus., Het., XIV, 1597, *Marmorinia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 47 pr. syn.

elegantalis Fitch.

1856. Fitch, 1st and 2nd Rept. Ins. N. Y., 327, pl. 1, f. 2, *Hypena*.

1872. Grt., Trans. Am. Ent. Soc., IV, 92, pr. syn.

1880. Grt., Can. Ent., XII, 87, pr. syn.

recusans Wlk.

1866. Wlk., C. B. Mus., xxxv, 1970, *Thyridospila*.

HABITAT.—Nova Scotia to Florida; Texas; Central States; New York, June to August; District of Columbia, in August.

Guenée's type of *epionoides* is in the Jardin des Plantes, where I did not find it. The type of *geometroides* is in the Boisduval collection, now with M. Oberthür. Walker's type is in the British Museum, where I have examined it. Fitch's type I have seen, but do not know where it is at present. A careful comparison of Guenée's descriptions with a long series of specimens leaves no reasonable doubt that this species is intended.

Genus **PHALÆNOSTOLA** Grt.

1873. Grt., Trans. Am. Ent. Soc., IV, 302.

P. larentioides Grt. *

1873. Grt., Trans. Am. Ent. Soc., IV, 302, *Phalænostola*.

var. *citima* Grt.

1873. Grt., Trans. Am. Ent. Soc., IV, 303, *Phalænostola*.

1882. Grt., New List, 42, pr. var.

HABITAT.—Middle, Central, and Southern States; New York, in June and August; District of Columbia, in June; Missouri, in August. The type is in the British Museum.

Genus **PSEUDAGLOSSA** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 47.

P. lubricalis Geyer. *

1832. Geyer, Zuträge, IV, 19, ff. 665, 666, *Epizeuxis*.

1854. Gn., Spec. Gen., Delt., 77, *Helia*.

1859. Wlk., C. B. Mus., Het., XVI, 135, *Epizeuxis*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 47, *Pseudaglossa*.

1881. Grt. Can. Ent., XIII, 91, *Epizeuxis*.

1880. Coquillett, Can. Ent., XII, 44, larva.

phæalis Gn.

1854. Gn., Spec. Gen., Delt., 76, *Helia*.

1859. Wlk., C. B. Mus., Het., XVI, 133, *Epizeuxis*.

1873. Grt., Trans. Am. Ent. Soc., IV, 308, *Helia*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 47, pr. syn.

1883. Grt., Can. Ent., XIII, 91, pr. syn.

surrectalis Wlk.

1859. Wlk., C. B. Mus., Het., XVI, 241, *Bleptina*.

1877. Grt., Can. Ent., IX, 29, pr. syn.

var. *occidentalis* Smith.

1884. Smith, Bull. Bkln. Ent. Soc., VII, 5, pr. var.

HABITAT.—United States, generally; Canada, in July; New York, June, July, August; Illinois, August, September; Texas, May to July, October; Colorado in October; Kansas in August; Nova Scotia.

Guenée himself suggested the identity of his *phæalis* with *lubricalis*; but, as Geyer recorded his species from Java, he kept his own specific term. Some other of Geyer's "Java" species are American, and I believe Mr. Grote was correct in making Guenée's suggestion a positive reference. The type of *surrectalis* is in the British Museum and is correctly referred by Mr. Grote. My types are in the National Museum and in the Edwards collection.

P. denticulalis Harv.*

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 283, *Pseudaglossa*.

HABITAT.—Middle, Eastern, and Central States; District of Columbia, July and August.

The type is in the British Museum.

P. scobialis Grt.*

1880. Grt., No. Amer. Ent., I, 95, *Pseudaglossa*.

HABITAT.—Eastern, Middle, and Central States; New York, June and July.

The type is in the British Museum.

P. rotundalis Wlk.*

1865. Wlk., C. B. Mus., Het., XXXIV, 1144, *Hormisa*.

borealis Smith.

1884. Smith, Bull. Bkln. Ent. Soc., VII, 5, *Helia*.

HABITAT.—Canada to Maryland to Illinois; Eastern, Middle, Central, and Southern States; District of Columbia in August.

The Walker type is in the British Museum and is the same as my *borealis*, the type of which is in the National Museum.

I have retained Mr. Grote's generic term for the preceding species, and use *Epizeuxis* instead of *Helia* for those following, pending the revisional study of this series, when the types can be fixed.

Genus **EPIZEUXIS** Hbn.
1816. Hbn., Verzeichniss, 346.

E. æmula Hbn.*

1815. Hbn., Ex. Schmett., III, 1, G. a., *Idiadolosa*.
1816. Hbn., Verzeichniss, 346, *Epizeuxis*.
1854. Gn., Spec. Gen., Delt., 78, *Helia æmulalis*.
1859. Wlk., C. B. Mus., Het., XVI, 134, *Epizeuxis*.
1873. Grt., Trans. Am. Ent. Soc., IV, 307, *Epizeuxis*.
mollifera Wlk.
1858. Wlk., C. B. Mus., Het., xv, 1765, *Microphysa*.
1868. G. & R., Trans. Am. Ent. Soc., II, 79, *Epizeuxis*.
1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 47, pr. syn.
herminioides Wlk.
1860. Wlk., Can. Nat. and Geol., v, 259, *Homoptera*.
1865. Bethune, Canadian Journal, x, 258, *Homoptera*.
1877. Grt., Can. Ent., IX, 28, *Epizeuxis*.
effusalis Wlk.
1860. Wlk., Can. Nat. and Geol., v, 264, *Hormisa*.
1877. Grt., Can. Ent., IX, 29, pr. syn.
concisa Wlk.
1860. Wlk., Can. Nat. and Geol., v, 265, *Hormisa*.
1877. Grt., Can. Ent., IX, 29, pr. syn.

HABITAT.—Canada, New York, and Northern States, July to September; South and West to Texas in March, April, and July; New Mexico; Colorado in September.

The type of *mollifera* is in the British Museum and is correctly referred. Mr. Grote has placed *Hormisa absorptalis* to this same form; but this is an error: it is really *Litognatha nubilifascia*. The types of *effusalis* and *concisa* are in the collection of the Entomological Society of Ontario, and these have been positively referred to *æmula* by Mr. Grote. The type of *herminioides*, from the same collection, was referred to *Epizeuxis* by Mr. Grote. If this generic reference is correct, the description will apply to *æmula* rather than *americalis*, and I have so referred the species.

E. americalis, Gn.*

1854. Gn., Spec. Gen., Delt., 78, pl. 6, f. 5, *Helia*.
1859. Wlk., C. B. Mus., Het., XVI, 134, *Epizeuxis*.
1873. Gn., Trans. Am. Ent. Soc., IV, 307, *Epizeuxis*.
1883. Riley, Can. Ent., xv, 171, larva.
scriptipennis Wlk.
1858. Wlk., C. B. Mus., Het., xv, 1765, *Microphysa*.
1868. G. & R., Trans. Am. Ent. Soc., II, 79, pr. syn.
1873. Grt., Trans. Am. Ent. Soc., IV, 307, pr. syn.

HABITAT.—Canada and New York, July to September; to Texas, July and November; east of the Rocky Mountains; New Mexico.

Guenée's type is probably with M. Oberthür. The type of *scriptipennis* is in the British Museum, where there is also a specimen bearing the name *pulverosa* in Walker's handwriting.

Genus **MEGACHYTA** Grt.

1873. Grt., Trans. Am. Ent. Soc., iv, 306.

M. lituralis Hbn.*1818. Hbn., Zuträge, i, 9, f. 19, 20, *Epizeuxis*.1816. Hbn., Verzeichniss, 346, *Epizeuxis*.1854. Gn., Spec. Gen., Delt., 79, *Helia*.1859. Wlk., C. B. Mus., Het., xvi, 134, *Epizeuxis*.1872. Zeller, Verh. k. k. zoöl. bot. Ges., xxii, 473, *Zanclognatha*.1873. Grt., Trans. Am. Ent. Soc., iv, 306, *Megachyta*.

HABITAT.—Canada to Florida and Texas; Central States; New York and Delaware in June; District Columbia in August.

M. theralis Wlk.*1859. Wlk., C. B. Mus., Het., xix, 855, *Herminia*.*deceptricalis* Zell.1872. Zeller, Verh. k. k. zoöl. bot. Ges., xxii, 473, *Zanclognatha*.var. *gypsalis* Grt.1880. Grt., Bull. Bkln. Ent. Soc., iii, 65, *Megachyta*.

HABITAT.—Nova Scotia to North Carolina, to Ohio.

Walker's type is in the British Museum, and is the *deceptricalis* of the Grote collection and of Zeller. The type of *gypsalis*, also in the Museum, is a partly suffused form, scarcely worthy of a varietal name.

M. inconspicualis Grt.1883. Grt., Can. Ent., xv, 30, *Megachyta*.

HABITAT.—New York.

The type is in the Hill collection.

Genus **HORMISA** Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 74.

H. absorptalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 74, *Hormisa*.*nubilifascia* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 85, pl. 2, f. 2, 3, *Litognatha*.

HABITAT.—Canada to Virginia; Central States; New York, in July.

Both types are in the British Museum. Mr. Grote refers *absorptalis* to *Epizeuxis amula*, and at first sight this appears correct, from the rubbed condition of the specimen; but more careful comparisons show that the species named by Mr. Grote *nubilifascia* is represented. The present species is fairly to be considered the type of *Hormisa*, and must replace *Litognatha*, which has the same type. A type of *nubilifascia* is also in Dr. Lintner's collection.

H. litophora Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 86, *Litognatha*.

HABITAT.—Middle and Central States.

The types are in the British Museum and in Dr. Lintner's collection.

H. linearis Grt.

1883. Grt., Can. Ent., xv, 121, *Litognatha*.

HABITAT.—Arizona.

The type is in the Neumægen collection.

Genus **HERMINIA** Latr.

1802. Latr., Gen. Crust. et Ins., III, 413, et iv, 2281

I use the term *Herminia* in preference to *Chytolita* Grt., because I can not find any sufficient differences between them. The genera need revision.

H. morbidalis Gn.*

1854. Gn., Spec. Gen., Delt., 56, pl. 6, f. 3, *Herminia*.

1859. Wlk., C. B. Mus., Het., xvi, 103, *Herminia*.

1872. Grt., Trans. Am. Ent. Soc., iv, 96, *Herminia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Chytolita*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 39, *Chytolita*.

1880. Coquillett, Can. Ent., xii, 44, larva.

HABITAT.—Nova Scotia; southward to Virginia; Central States; Canada and New York in June and July.

The types are probably with M. Oberthür.

H. petrealis Grt.*

1880. Grt., Can. Ent., xii, 219, *Chytolita*.

HABITAT.—Middle and Central States; Canada.

The type is in the British Museum.

Genus **PITYOLITA** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 33.

P. pedipilalis Gn.*

1854. Gn., Spec. Gen., Delt., 57, *Herminia*.

1859. Wlk., C. B. Mus., Het., xvi, 57, *Herminia*.

1872. Grt., Trans. Am. Ent. Soc., iv, 96, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 39, *Pityolita*.

HABITAT.—Middle and Central States; Virginia; New York in June; Missouri in June; District of Columbia in August; Delaware in May.

The type is probably with M. Oberthür. In the British Museum are specimens of this species and of *morbidalis*, apparently named by Guenée.

Genus **ZANCLOGNATHA** Led.

1857. Lederer, Noct. Europ., 211.

Z. lævigata Grt.*

1872. Grt., Trans. Am. Ent. Soc., iv, 95, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 39, *Zanclognatha*.

1878. Grt., Bull. Geol. Surv., iv, 186, *Zanclognatha*.

HABITAT.—Canada to Southern States; Central States; Canada and New York in July.

Types are in the collection of the American Entomological Society and in the British Museum. This species is the *cruralis* of the British collection; but not of Guenée's description, which I believe has been correctly interpreted by Mr. Grote.

***Z. obsoleta* Smith. ***

1884. Smith, Bull. Bkln. Ent. Soc., VII, 5, *Zanclognatha*.

HABITAT.—Vermont in August.

The type is in the National Museum.

Z. ochreipennis* Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 98, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 39, *Zanclognatha*.

HABITAT.—Canada to Virginia; Central States; Canada and New York in July; Delaware and District of Columbia in August.

The type is in the collection of the American Entomological Society.

Z. cruralis* Gn.

1854. Gn., Spec. Gen., Delt., 58, *Herminia*.

1859. Wlk., C. B. Mus., Het., XVI, 103, *Herminia*.

1872. Grt., Trans. Am. Ent. Soc., IV, 97, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 39, *Zanclognatha*.
jacchusalis Wlk.

1859. Wlk., C. B. Mus., Het., XVI, 104, *Herminia*.

HABITAT.—Nova Scotia to Virginia; Central States; New Mexico; New York and Illinois in July and August; District of Columbia in August.

The type of *cruralis* is probably with Mr. Oberthür. The Walker type is in the British Museum and is the *cruralis* of Guenée, but not of Walker. The latter is *laevigata* Grt.

Z. marcidilinea* Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 93 et 309, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 39, *Zanclognatha*.

HABITAT.—New York to Alabama; Central States; Adirondack Mountains, July and September; Delaware in July.

The type is in the collection of the American Entomological Society. The *Z. ochreipennis* and *marcidilinea* of the British Museum are the same species. There is more difference between the types.

***Z. obscuripennis* Grt.**

1872. Grt., Trans. Am. Ent. Soc., IV, 98 and 309, *Herminia*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 39, *Zanclognatha*.

HABITAT.—New York to Alabama.

The types are in the collection of the American Entomological Society and the British Museum. It is more than likely that this will prove a dark form of *ochreipennis*. The species need revision, and as the types are mostly in Philadelphia the work will not be difficult.

Z. protumnusalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 104, *Herminia*.*minimalis* Grt.1878. Grt., Bull. Geol. Surv., iv, 186, *Zanclognatha*.

1891. Smith, List Lepid., 63, pr. syn.

HABITAT.—Canada; Middle and Central States; District of Columbia in August.

The types are both in the British Museum and are alike. I have a carefully compared specimen.

Genus **CLEPTOMITA** Grt.

1873. Grt., Trans. Am. Ent. Soc., iv, 301.

C. atrilineella Grt.1873. Grt., Trans. Am. Ent. Soc., iv, 301, *Cleptomita*.**HABITAT.**—Texas.

I have somewhere seen a specimen of this species marked type; but I have no memorandum concerning it and can not now recollect the circumstances. A specimen is in the collection of the American Entomological Society, and this may be the type of my recollection, though not now so marked.

Genus **PALLACHIRA** Grt.

1877. Grt., Can. Ent., ix, 197.

P. bivittata Grt.*1877. Grt., Can. Ent., ix, 198, *Pallachira*.

HABITAT.—Canada; Northern, Middle, and Central States; occasional.

The type is with Dr. Thaxter.

Genus **PHILOMETRA** Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 99.

P. goasalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 134, *Epizeuris*.1859. Wlk., C. B. Mus., Het., xix, 876, *Epizeuxis*.*metonalis* Wlk.1859. Wlk., C. B. Mus., Het., xvi, 236, *Herminia*.*longilabris* Grt.1872. Grt., Trans. Am. Ent. Soc., iv, 99, 309, *Philometra*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 40, *Philometra*.

HABITAT.—Nova Scotia; Hudson's Bay Territory to Virginia; Central States; June, July, and August.

Walker's types are in the British Museum and agree with each other and with the Grote type in the collection of the American Entomological Society. The latter type has just body enough remaining to hold the wings together. Head, feet, and everything else are gone. Under *goasalis* Walker has also a specimen of *Herminia petrealis* Grt., which he did not recognize as distinct.

P. eumelusalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 105, *Herminia*.*serraticornis* Grt.1872. Grt., Trans. Am. Ent. Soc., iv, 98, 309, *Philometra*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 40, *Philometra*.

1891. Smith, List Lepid., 63, pr. syn.

HABITAT.—Canada and New York, in July, to Virginia; Central States.

The type of *eumelusalis* is in the British Museum, that of *serraticornis* is in the collection of the American Entomological Society. The latter consists of wings only, with a piece of thorax to hold them together.

Genus **SALIA** Hbn.

1816. Hbn., Verzeichniss, 339.

S. interpuncta Grt.*1872. Grt., Trans. Am. Ent. Soc., iv, 93, *Madopa*.1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Calobochila*.1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 170, *Calobochila*.1875. Grt., Bull. Buff. Soc. Nat. Sci., ii, 223, *Salia*.1880. Grt., Can. Ent., xii, 220, *Salia*.*saligna* Zell.1872. Zell., Verh. k. k. zööl. bot. Ges., xxii, 462, *Calobochila*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 170, pr. syn.

HABITAT.—Massachusetts to Florida and Texas.

I have not seen the type.

S. rufa Grt.*1883. Grt., Can. Ent., xv, 31, *Salia*.

HABITAT.—Arizona.

The types are in the National Museum and in the Neumægen collection.

Genus **RIVULA** Gn.

1854. Gn., Spec. Gen., Delt., 47.

R. propinqualis Gn.*1854. Gn., Spec. Gen., Delt., 49, *Rivula*.1859. Wlk., C. B. Mus., Het., xv, 93, *Rivula*.1875. Speyer, Stett. Ent. Zeit., xxxvi, 169, *Rivula*.

HABITAT.—Nova Scotia to Texas; Central States. Canada in June; New York, June and July; District of Columbia in August.

The type is in the British Museum.

R. tripla Grt.

HABITAT.—Arizona; New Mexico.

The type is in the Neumægen collection and is not a *Rivula*, probably not even a *Deltoid*. The neuration is normally noctuidous, not aberrant as in *Rivula*, but otherwise I have had no opportunity of trying to ascertain its true position. I have found no description of the species and perhaps this is a mere collection name which should not be criticised.

Genus **PALTHIS** Hbn.
1816. Hbn., Verzeichniss, 342.

P. angualis Hbn.*

1796. Hbn., Schmett. Eur., Pyr., f. 107, *Pyralis*.
1816. Hbn., Verzeichniss, 342, *Palthis*.
1825. Tr., Schmett. Eur., v, 36, *Hypena*.
1852. H. Sch., Eur. Schmett., vi, 382, *Herminia*.
1854. Gn., Spec. Gen., Delt., 95, *Clanyma*.
1859. Wlk., C. B. Mus., Het., xvi, 152, *Palthis*.
1872. Grt., Trans. Am. Ent. Soc., iv, 107, *Clanyma*.
1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Palthis*.
aracanthusalis Wlk.
1859. Wlk., C. B. Mus., Het., xvi, 157, *Mardara*.

HABITAT.—Canada, in June, to Texas; Central States; New York, June to August; Missouri, May and June; District of Columbia, in May.

Walker's type is in the British Museum and is this common species. No locality was given and both generic and specific descriptions are such that recognition was out of question.

P. asopialis Gn.*

1854. Gn., Spec. Gen., Delt., 96, *Clanyma*.
1859. Wlk., C. B. Mus., Het., xvi, 152, *Palthis*.
1872. Grt., Trans. Am. Ent. Soc., iv, 108, *Clanyma*.
1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Palthis*.

HABITAT.—With the preceding.

The type is probably with *M. Oberthür*.

Genus **HETEROGRAMMA** Gn.
1854. Gn., Spec. Gen., Delt., 91.

H. pyramusalis Wlk.*

1859. Wlk., C. B. Mus., Het., xvi, 106, *Herminia*.
gyasalis Wlk.
1859. Wlk., C. B. Mus., Het., xix, 856, *Herminia*.
rurigena Grt.
1873. Grt., Trans. Am. Ent. Soc., iv, 305, *Phalaenophana*.
1884. Smith, Bull. Bkln. Ent. Soc., vii, 6, *Heterogramma*.

HABITAT.—Canada, in June; New York, in May; Middle, Central and Southern States; Missouri and District of Columbia, in August.

All the types are in the British Museum and were directly compared.

H. palligera Smith.*

1884. Smith, Bull. Bkln. Ent. Soc., vii, 6, *Heterogramma*.

HABITAT.—California; Florida.

The types are in the National Museum and Edwards collection. It is perhaps possible that the Floridian form is not the same as that from California; but the differences have seemed unimportant from the material at command.

Genus **PSEUDORGYIA** Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 283.

P. versuta Harv.*1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 284, *Pseudorgyia*.

HABITAT.—Texas, in May.

The type is in the British Museum. A series of specimens in the National Museum from the Belfrage collection; evidently form part of the lot from which Dr. Harvey's type was received.

P. russula Grt.1883. Grt., Papilio, III, 75, *Pseudorgyia*.

HABITAT.—Arizona.

The type is in the Neumögen collection.

Genus **SISYRHYPENA** Grt.

1873. Grt., Can. Ent., v, 227.

S. orCIFERALLIS Wlk.*1859. Wlk., C. B. Mus., Het., XVI, 235, † *Hormisa*.1859. Wlk., C. B. Mus., Het., XIX, 876, † *Epizeuxis*.*pupillaris* Grt.1873. Grt., Can. Ent., v, 227, *Sisyrhypena*.

HABITAT.—Texas; Southern States.

Both the types are in the British Museum and have been directly compared.

Genus **CAPIIS** Grt.

1882. Grt., Can. Ent., XIV, 20, 119.

C. curvata Grt.*1882. Grt., Can. Ent., XIV, 20 et 119, *Capis*.1882. Smith, Can. Ent., XIV, 100, *Capis*.1882. Grt., Papilio, II, 185, *Capis*.1883. Grt., Can. Ent., XV, 6, *Capis*.

HABITAT.—Canada, in July; Maine to New York; Northern and Middle States.

Types are in the British Museum and in the U. S. National Museum.

Genus **RENIA** Gn.

1854. Gn., Spec. Gen., Delt., 91.

R. discoloralis Gn.*1854. Gn., Spec. Gen., Delt., 82, *Renia*.*fallacialis* Wlk.1859. Wlk., C. B. Mus., Het., XVI, 38, *Hypena*.

1872. Grt., Trans. Am. Ent. Soc., IV, 25, 100, pr. syn

generalis Wlk.1859. Wlk., C. B. Mus., Het., XVI, 29, *Hypena*.*thrazalis* Wlk.1859. Wlk., C. B. Mus., Het., XVI, 109, *Herminia*.

1891. Smith, List Lepidopt., 63, pr. syn.

HABITAT.—Canada to Virginia; Central States; New York and Delaware, in July; District of Columbia, in August.

Guenée's types are probably with M. Oberthür. The Walker types are in the British Museum. They agree with each other and with the specimens identified by Mr. Grote as *discoloralis*. Walker did not really recognize Guenée's genus and described a number of species belonging to it under *Herminia* and *Hypena*. Curiously enough, nearly all of Walker's Deltoids can be recognized from the description. I tried to recognize the species before I expected to have the chance to study them autoptically, and in every case my identification proved correct. Under *fallacialis*, Walker's first specimen from which the description was drawn is *discoloralis*, while the others are *brevirostralis*.

R. salusalis Wlk.*

1859. Wlk., C. B. Mus., Het., xvi, 107, *Herminia*.
brevirostralis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 25, *Renia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 309, pl. i, ff.; 91, 92, *Renia*.

HABITAT.—Eastern, Middle, and Central States; Alabama; Colorado.

Walker's type is in the British Museum.

Types of the Grote species are in the collection of the American Entomological Society and also in the British Museum. I could thus compare the types of both species.

R. alutalis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 99, *Renia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Renia*.

HABITAT.—Middle States.

I have not seen the type. It was probably in the collection at Philadelphia, and has been destroyed. The specimens in the British Museum from the Grote collection agree with my identification of the species.

R. sobrialis Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 228, *Hypena*.
restricatalis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 26, pl. i, f. 94, *Renia*.

HABITAT.—Nova Scotia to Virginia; Central States.

Walker's type is in the British Museum. Types of Grote's species are in the collection of the American Entomological Society and in the British Museum.

R. larvalis Grt.*

1872. Grt., Trans. Am. Ent. Soc., iv, 20, *Renia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 303, *Renia*.

HABITAT.—New York in August, to Texas; Delaware in May; Central States; Florida in March.

Types are in the collection American Entomological Society and in the British Museum. This seems to me only a larger and paler form of *restrictalis*. The palpal characters pointed out by Mr. Grote are evanescent, I believe; but it will require further study to state this positively.

R. olitosalis* Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 108, *Herminia*.

centralis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 27, *Renia*.

HABITAT.—Nova Scotia to West Virginia; Central States; New York in August; District of Columbia in August.

Walker's type is in the British Museum. Types of the Grote species are in the collection of the American Entomological Society and in the British Museum. From a specimen named by Walker in the D'Urban collection, Mr. Grote referred this name to *Bleptina caradrinalis* (Can. Ent., ix, 29). It is probable that this is only a small, dark form of *sobrialis* (*restrictalis*).

R. flavipunctalis* Geyer.

1832. Geyer, Zuträge, iv, 25, f. 701, 702, *Antiblemma*.

1859. Wlk., C. B. Mus., Het., xix, 859, † *Herminia*.

1881. Grt., Can. Ent., xiii, 91, *Renia*.

phalerosalis Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 107, *Herminia*.

heliusalis Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 108, *Herminia*.

pastoralis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 27, *Renia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 304, = *belfragei*.

belfragei Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 27, *Renia*.

1873. Grt., Trans. Am. Ent. Soc., iv, 304, pl. i, f. 95, *Renia*.

1883. Grt., Can. Ent., xiii, 91, pr. syn.

HABITAT.—Canada to Texas; Alabama; New Mexico; New York in July and August; Texas, May and June; Colorado in August and September.

Geyer's species was described from Java; but represents our common form. Types of the Grote and Walker species are in the British Museum, and a type of *belfragei* is also in the collection of the American Entomological Society.

R. factiosalis* Wlk.

1859. Wlk., C. B. Mus., Het., xvi, 37, *Hypena*.

plenilinealis Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 99, *Renia*.

HABITAT.—Canada in August; Middle States; Colorado in August and September.

Walker's type is in the British Museum, while Mr. Grote's is in the collection of the American Entomological Society. It is likely that *alutalis* will come to this species as a variety.

Genus **TETANOLITA** Grt.

1873. Grt., Trans. Am. Ent. Soc., IV, 305.

T. mynesalis Wlk.*1859. Wlk., C. B. Mus., Het., XIX, 860, *Bleptina*.
lixalis Grt.1873. Grt., Trans. Am. Ent. Soc., IV, 306, *Tetanolita*.**HABITAT.**—Middle, Central and Southern States; Illinois in July; Texas in March, May, and October.Walker's type is in the British Museum and is like the *lixalis* of the Grote collection. The type of the latter I have not seen. It was probably at Philadelphia, as were most of the species described by Mr. Grote in the two papers in the fourth volume of the "Transactions."Genus **BLEPTINA** Gn.

1854. Gn., Spec. Gen., Delt., 66.

B. caradrinalis Gn.*1854. Gn., Spec. Gen., Delt., 67, *Bleptina*.1859. Wlk., C. B. Mus., Het., XVI, 120, *Bleptina*.1872. Grt., Trans. Am. Ent. Soc., IV, 93, *Bleptina*.1878. Grt., Bull. Geol. Surv., III, 799, *Bleptina*.*cloniasalis* Wlk.1859. Wlk., C. B. Mus., Het., XVI, 105, *Herminia*,

1877. Grt., Can. Ent., IX, 29, pr. syn.

HABITAT.—Canada to Texas to Colorado; New Mexico; northern range in July; Texas in April, May, and June; Kansas in June; Delaware in June; Colorado in June.

Guenée's type is probably with M. Oberthür. Walker's type is in the British Museum.

B. inferior Grt.*1872. Grt., Trans. Am. Ent. Soc., IV, 94, *Bleptina*.**HABITAT.**—New York to Alabama; Central States; Texas in May, August, and October.

The type is in the collection of the American Entomological Society.

Genus **HYPENULA** Grt.

1876. Grt., Can. Ent., VIII, 27.

H. cacuminalis Wlk.*1859. Wlk., C. B. Mus., Het., XVI, 37, *Hypena*.1891. Smith, List Lepid., 63, *Hypenula*.*biferalis* Wlk.1859. Wlk., C. B. Mus., Het., XVI, 237, *Herminia*.*opacalis* Grt.1876. Grt., Can. Ent., VIII, 27, *Hypenula*.**HABITAT.**—Southern States; Texas, May and August.

All the types are in the British Museum, and refer to one species only.

Genus **LOMANALTES** Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 13.

L. eductalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 36, *Hypena*.*latulus* Grt.1873. Grt., Bull. Buff. Soc. Nat. Sci., 1, 14, pl. 1, ff. 12, 13, *Lomanaltes*.

HABITAT.—Nova Scotia to Pennsylvania; Minnesota; New York in May.

Both the types are in the British Museum, and refer to one species only.

Genus **BOMOLOCHA** Hbn.

1816. Hbn., Verzeichniss, 343.

B. baltimoralis Gn.*1854. Gn., Spec. Gen., Delt., 34, *Hypena*.1859. Wlk., C. B. Mus., Het., xvi, 31, *Hypena*.1870. Rob., Ann. Lyc. Nat. Hist., N. Y., ix, 310, *Hypena*.1872. Grt., Trans. Am. Ent. Soc., iv, 102, *Hypena*.1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Bomolocha*.1873. Grt., Can. Ent., v, 226, *Bomolocha*.

1882. Pack., Papilio, II, 181, larva.

benignalis Wlk.1859. Wlk., C. B. Mus., Het., xvi, 32, *Hypena*.

1870. Rob., Ann. Lyc. Nat. Hist., N. Y., ix, 310, pr. syn.

1873. Grt., Can. Ent., v, 220, pr. syn.

laciniosa Zell.1872. Zell., Verh. k. k. zoöl.-bot. Ges., xxii, 464, pl. II, f. 8, *Hypena*.

1873. Grt., Can. Ent., v, 226, pr. syn.

HABITAT.—Nova Scotia to Middle and Central States; Canada and New York in June; District of Columbia in August.

Guenée's type is probably with *M. Oberthür*. The Walker and Zeller types are in the British Museum. *Benignalis* is the paler form of the species; *laciniosa* is the darker, more typical form.

B. scutellaris Grt.*1873. Grt., Can. Ent., v, 225, *Bomolocha*.

HABITAT.—British Columbia; Middle and Northern States; New York in August.

The type is in the British Museum. I have a carefully compared figure of the specimen.

H. manalis Wlk.*1859. Wlk., C. B. Mus., Het., xvi, 33, *Hypena*.1870. Rob., Ann. Lyc. Nat. Hist., N. Y., ix, 311, *Hypena*.1872. Grt., Trans. Am. Ent. Soc., iv, 103, *Hypena*.1873. Grt., Trans. Am. Ent. Soc., iv, 309, *Bomolocha*.

HABITAT.—Canada; Northern and Middle States; Minnesota; District of Columbia in June.

The type is in the British Museum.

B. bijugalis Wlk.*

1859. Wlk., C. B. Mus., Het., xvi, 32, *Hypena*.
 1870. Rob., Ann. Lye. Nat. Hist., N. Y., ix, 311, *Hypena*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 103, *Hypena*.
 1873. Grt., Trans. Am. Ent. Soc., iv, 309, pl. i, f. 93, *Bomolocha*.
 1873. Grt., Can. Ent., v, 226, *Bomolocha*.
pallialis Zell.
 1872. Zell., Verh. k. k. zoöl. bot. Ges., xxii, 466, pl. ii, f. 9, *Hypena*.
 1873. Grt., Can. Ent., v, 226, pr. syn.
fecialis Grt.
 1881. Grt., Can. Ent., xiii, 133, *Bomolocha*.

HABITAT.—Canada to Florida, west to the Rocky Mountains; Canada and New York in June; Texas in July.

The Walker and Grote types are in the British Museum. *Fecialis* is based on a washed out, faded specimen, which thus looks different.

B. abalinealis Wlk.*

1859. Wlk., C. B. Mus., Het., xvi, 31, *Hypena*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 102, *Hypena*.
 1873. Grt., Can. Ent., v, 226, *Bomolocha*.
 1891. Dyar, Can. Ent., xxiii, 157, larva.

HABITAT.—Canada; Eastern, Middle, and Central States; June, July, and August.

The type is in the British Museum.

B. annulalis Grt.

1876. Grt., Check List Noct., 45, *Bomolocha*.

HABITAT.—Texas.

The type in the British Museum represents a species I had not before seen.

B. achatinalis Zell.*

1872. Zell., Verh. k. k. zoöl. bot. Ges., xxii, 468, pl. ii, f. 7, *Hypena*.
 1873. Grt., Can. Ent., v, 226, =*madefactalis*.

HABITAT.—Middle States to Texas; Delaware in June.

The type is in the Museum of Comparative Zoölogy at Cambridge. Zeller suspected that he might be redescribing Guenée's species, and Mr. Grote at once discovered that it was what he had identified as such, and referred Zeller's name to the synonymy. Later he restored the name, and has continued to use it as well as *madefactalis* without further explanation. There seems to be some confusion of labels in the Grote collection, for the same species is named both *toreuta* and *achatinalis*.

B. madefactalis Gn.

1854. Gn., Spec. Gen., Delt., 35, *Hypena*.
 1859. Wlk., C. B. Mus., Het., xv, 33, *Hypena*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 103, *Hypena*.
 1873. Grt., Can. Ent., v, 226, *Bomolocha*.

HABITAT.—Middle and Southern States.

Described from a figure by Abbot. I am not certain that this species, as distinct from the forms of *achatinalis*, has been identified in our collections.

B. idæusalis Wlk. *

1859. Wlk., C. B. Mus., Het., xix, 839, † *Hypena*.
citata Grt.

1872. Grt., Trans. Am. Ent. Soc., iv, 101, *Hypena*.

1876. Grt., Check List Noct., 45, *Bomolocha*.
trituberalis Zell.

1872. Zell., Verh. k. k. zoöl. bot. Ges., xxii, 469, pl. II, f. 6, *Hypena*.

1882. Grt., New List, 44, pr. syn.

HABITAT.—Southern States; Texas; Illinois in August.

The Grote and Walker types are in the British Museum. The Zeller type is at Cambridge, and all refer to one species.

B. mitographa Grt.

1873. Grt., Trans. Am. Ent. Soc., iv, 296, *Erastria*.

1881. Grt., Papilio, i, 11, *Eustrotia*.

HABITAT.—Alabama.

The type is in the British Museum. It is only half a specimen, both wings of one side missing; but it shows plainly a *Hypena* near *citata*, unlike anything I had before seen.

B. toreuta Grt.*

1872. Grt., Trans. Am. Ent. Soc., iv, 24, *Hypena*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 38, *Euhypena*.
internalis ♀ Rob.

1870. Rob., Ann. Lyc. Nat. Hist. N. Y., ix, 311, *Hypena*.

1892. Grt., Trans. Am. Ent. Soc., iv, 24, pr. syn.

albispinalis Zell.

1872. Zell., Verh. k. k. zoöl. bot. Ges., xxii, 463, *Hypena*.

1876. Grt., Check List Noct., 45, pr. syn.

HABITAT.—Middle States to Texas, July.

Mr. Grote's type is in the collection of the American Entomological Society. The Zeller type is at Cambridge.

B. sordidula Grt.*

1872. Grt., Trans. Am. Ent. Soc., iv, 103, *Hypena*.

HABITAT.—Pennsylvania; Texas.

I have not seen the type. The specimens in the Grote collection in the British Museum are from Belfrage, Texas. It is likely that the typical example was in the collection of the American Entomological Society.

B. umbralis Smith.*

1884. Smith, Bull. Bkln. Ent. Soc., vii, 4, *Bomolocha*.

HABITAT.—Florida.

The type is in the National Museum.

B. caducalis Wlk.*

1859. Wlk., C. B. Mus., Het., XVI, 35, *Hypena*.

profecta Grt.

1872. Grt., Trans. Am. Ent. Soc., IV, 104, *Hypena*.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 30, *Macrhypena*.

HABITAT.—Canada, Northern, Eastern, and Middle States.

Mr. Walker's type is in the British Museum. Where the Grote type is at present, I do not know. The specimens of *profecta* from the Grote collection are like the Walker species.

B. deceptalis Wlk.*

1859. Wlk., C. B. Mus., Het., XVI, 30, *Hypena*.

1872. Grt., Trans. Am. Ent. Soc., IV, 104, *Hypena*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 51, *Macrhypena*.

HABITAT.—Canada to Virginia; Central States; New York in July.

The type is in the British Museum. The specimens so named in the Grote collection are like the type.

B. damnosalis Wlk.*

1859. Wlk., C. B. Mus., Het., XVI, 28, *Hypena*.

perangulalis Harv.

1875. Harv., Bull. Buff. Soc. Nat. Sci., II, 283, *Bomolocha*.

HABITAT.—Canada to Middle and Central States; New York in July.

Walker's type is in the British Museum and is like the *perangulalis* of the Grote collection and of American collections generally. Other specimens associated with the type by Walker are *deceptalis*. As a matter of fact, I believe that the two names refer to forms of one species only.

B. edictalis Wlk.*

1859. Wlk., C. B. Mus., Het., XVI, 28, *Hypena*.

vellifera Grt.

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 87, pl. II, f. 7, *Meghypena*.

HABITAT.—Canada; New York in July; Northern and Eastern States.

Walker's type is in the British Museum; the Grote type is in the National Museum from the Meske collection. Specimens of *vellifera* from the Grote collection made actual comparison possible.

B. lentiginosa Grt.*

1873. Grt., Bull. Buff. Soc. Nat. Sci., I, 87, *Meghypena*.

HABITAT.—New York; Northern States.

The type is with Dr. Lintner. I believe that this is merely a form of the preceding.

Genus **HYPENA** Schrank.1802. Schrank, *Fauna Boica*, n, 2, 163.**H. humuli** Harr.*

1835. Harris, *Cat. Ins. Mass.*, 74, *Crambus*.
 1841. Harris, *Rept. Ins. Mass.*, 345, *Hypena*.
 1855. Fitch, *Trans. N. Y. State Agl. Soc.*, xv, 555, pl. 1, f. 1, *Hypena*.
 1856. Fitch, 1st and 2d *Rept. Ins. N. Y.*, 323, pl. 1, f. 1, *Hypena*.
 1862. Harris, *Injurious Insects*, Flint ed., 477, f. 237, *Hypena*.
 1872. Grt., *Trans. Am. Ent. Soc.*, iv, 101, *Hypena*.
 1878. Lint., *Ent. Cont.*, iv, 128, *Hypena*.
 evanidalis Rob.
 1870. Rob., *Ann. Lyc. Nat. Hist.*, N. Y., ix, 311, *Hypena*.
 1872. Grt., *Trans. Am. Ent. Soc.*, iv, 101, *Hypena*.
 1872. Grt., *Can. Ent.*, iv, 111, *Hypena*.
 1873. Grt., *Trans. Am. Ent. Soc.*, iv, 309, pl. 1, f. 87, *Hypena*.
 1878. Lint., *Ent. Cont.*, iv, 128, pr. syn.
 germanalis Wlk.
 1859. Wlk., *C. B. Mus.*, Het., xvi, 35, *Hypena*.
 1874. Grt., *Bull. Buff. Soc. Nat. Sci.*, ii, 52, pr. syn.
 var. *olivacea* Grt. *
 1873. Grt., *Can. Ent.*, v, 226, *Hypena*.
 1882. Grt., *New List*, 44, pr. var.
 var. *albopunctata* Tepper.
 1881. Tepper, *Bull. Bkln. Ent. Soc.*, iv, 2, pl. 1, f. 5, *Hypena*.
 1891. Smith, *List Lepid.*, 64, pr. var.

HABITAT.—Canada; Northern and central United States, south to Alabama, west to Washington; Colorado in September, October; British Columbia, May to July, September, October; Delaware in August; Kansas in April.

A specimen labeled *humuli* is in the Harris collection at the Boston Society of Natural History, and is presumably a type. The type of *evanidalis* I have not seen. That of *germanalis* is in the British Museum and is normal *humuli*. In the same collection is the type of *olivacea*, which scarcely deserves a varietal name. The type of *albopunctata* is in the Tepper collection, and is a very dark, almost black, form from Washington. But for a very large series from widely divergent localities I would have considered this Pacific coast form specifically distinct. A series from British Columbia recently received places the relationship beyond reasonable doubt.

H. californica Behr.*

1870. Behr, *Trans. Am. Ent. Soc.*, iii, 23, *Hypena*.

HABITAT.—California; British Columbia.

Typical specimens are in the Edwards collection.

H. decorata Smith.*

1884. Smith, *Bull. Bkln. Ent. Soc.*, vii, 4, *Hypena*.

HABITAT.—California; Vancouver.

Types are in the National Museum and in the Edwards collection.

H. scabra Fabr.*

1794. Fabr., Ent. Syst., Suppl., iv, 448, *Hyblæa*.
 1854. Gn., Spec. Gen., Delt., 40, *Hypena*.
 1859. Wlk., C. B. Mus., Het., xvi, 34, *Hypena*.
 1872. Grt., Trans. Am. Ent. Soc., iv, 102, *Hypena*.
 1873. Lint., Can. Ent., v, 81, *Hypena*.
 1873. Grt., Bull. Buff. Soc. Nat. Sci., i, 38, *Plathypena*.
 1880. Riley, Amer. Ent., iii, 8, *Hypena*.
 1880. Coquillett, Can. Ent., xii, 43, larva.
 1881. Coquillett, Can. Ent., xiii, 137, larva.
erectalis Gn.
 1854. Gn., Spec. Gen., Delt., 40, *Hypena*.
 1859. Wlk., C. B. Mus., Het., 35, ♀ an var. pr.
 1872. Grt., Trans. Am. Ent. Soc., iv, 102, *Hypena*.
 1873. Lint., Can. Ent., v, 81, = ♀ prec.
palpalis Haw.
 1812. Haw., Lep. Britt., 361, *Crambus*.
 1829. Steph., Ill. Brit. Ent., Haust., iv, 12, *Hypena*.
 1854. Gn., Spec. Gen., Delt., 40, pr. syn.
 1859. Wlk., C. B. Mus., Het., xvi, 34, pr. syn.
crassatus Haw.
 1812. Haw., Lep. Britt., 336, *Crambus*.
 1854. Gn., Spec. Gen., Delt., 40, ♀ = *erectalis*.
 1859. Wlk., C. B. Mus., Het., xvi, 35, = *erectalis*.
obesalis Steph.
 1829. Steph., Ill. Brit. Ent., Haust., iv, 11, *Hypena*.
 1859. Wlk., C. B. Mus., Het., xvi, 35, = *erectalis*.
subrufalis Grt.
 1872. Grt., Trans. Am. Ent. Soc., iv, 102, var. *erectalis*.

HABITAT.—Nova Scotia to Texas; east of the Rocky Mountains, June to October.

I have seen none of the types. The references to Haworth and Stephens are from Walker and have not been verified by me.

Of the other American species referred to *Hypena* by Walker, *H. rufinalis* is *Crambus abtrusellus* Wlk., and *H. cæcalis* is *Scoparia centuriella*. The comparisons for the specific determination of these insects were kindly made for me by Mr. Warren, after I had pointed out the specimens to him.

Genus GABERASA Wlk.

1865. Wlk., C. B. Mus., Het., xxxiv, 1197.

G. ambigualis Wlk.*

1865. Wlk., C. B. Mus., Het., xxxiv, 1198, *Gaberasa*.
bifidalis Grt.
 1872. Grt., Trans. Am. Ent. Soc., iv, 105, *Tortricodes*.
 1878. Grt., Bull. Geol. Surv., vi, 564, *Eulintneria*.
 ♀ *indivialis* Grt.
 1872. Grt., Trans. Am. Ent. Soc., iv, 106, *Tortricodes*.
 1873. Grt., Trans. Am. Ent. Soc., iv, 308, *Heterogramma*.
 1878. Lintner, Ent. Contrib., iv, 110, pr. syn.

HABITAT.—Canada to Texas; New York May to August.

The type of the Walker species is in the British Museum. Both the Grote types are in the collection of the American Entomological Society. I use Walker's generic term in preference to *Tortricodes*, used in my list of Lepidoptera, because the South American species seen by me resemble our species less than the generic description would indicate.

Genus **DERCETIS** Grt.

1878. Grt., Bull. Geol. Surv., iv, 186.

D. vitrea Grt. *

1878. Grt., Bull. Geol. Surv., iv, 187, *Dercetis*.

HABITAT.—New York in July; Middle States.

D. pygmæa Grt. *

1878. Grt., Bull. Geol. Surv., iv, 187, *Dercetis*.

HABITAT.—Texas, July; Florida.

Types of both of the species are in the British Museum.

Family **BREPHIDÆ**.

Genus **BREPHOS** Ochs.

1816. Ochs., Schmett. Eur., iv, 96.

B. infans Mæschl. *

1862. Mæschl., Wien. Ent. Monatschr., vi, 134, pl. 1, f. 4, *Brephos*.

1865. Wlk., C. B. Mus., Het., xxxiii, 806, *Brephos*.

1867. G. & R., Trans. Am. Ent. Soc., i, 189, *Archicaris*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 171, *Brephos*.

1878. Lint., Ent. Cont., iv, 227, 229, *Brephos*.

1885. Dimmock, A. K., Psyche, iv, 273, *Brephos*.

1886. Snellen, Tijdschr. voor Entom., xxix, 137, *Brephos*.
parthenias† Wlk.

1857. Wlk., C. B. Mus., Het., xvii, 841, *Archicaris*.

1860. Mæschl., Wien. Ent. Monatschr., iv, 371, *Brephos*.

1862. Mæschl., Wien. Ent. Monatschr., vi, 134, pr. syn.
hamadryas Harr.

1869. Harr., Ent. Corr., by Scudder, 174, pl. 1, f. 4, *Brephos*.

1867. Grt. & Rob., Trans. Am. Ent. Soc., i, 189, pr. syn.

HABITAT.—Labrador to New York in April; Canada in May.

Grote & Robinson's synonymic reference of Harris's species was made before the name was actually published.

B. melanis Bdv.

1868. Bdv., Lep. Cal., Ann. Soc. Ent. Belg., xii, 88, *Brephos*.

HABITAT.—California.

B. californicus Bdv.

1868. Bdv., Lep. Cal., Ann. Soc. Ent. Belg., xii, 88, *Brephos*.

HABITAT.—California.

I am not aware that the above species described by Boisduval have

ever been definitely recognized or referred. It ought not to be difficult to ascertain what was intended when the material is at hand.

Genus **LEUCOBREPHOS** Grt.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53.

L. brephoides Wlk.

1857. Wlk., C. B. Mus., Het., XI, 702, *Anarta*.

1864. Grt., Proc. Ent. Soc. Phil., III, 74, *Anarta*.

1867. G. & R., Trans. Am. Ent. Soc., I, 188, *Archicaris*.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 53, *Leucobrephos*.

1883. Grt., Can. Ent., XV, 55, *Leucobrephos*.

resoluta Zell.

1863. Zell., Stett. Ent. Zeit., XXIV, 136, pl. II, f. 1, *Archicaris*.

1867. G. & R., Trans. Am. Ent. Soc., I, 188, pr. syn.

1874. Grt., Bull. Buff. Soc. Nat. Sci., II, 63, pr. syn.

hoyi Grt.

1880. Grt., Bull. Bkln. Ent. Soc., III, 30, *Melicleptria*.

1883. Smith, Trans. Am. Ent. Soc., X, 251, *Melicleptria*.

1883. Grt., Can. Ent., XV, 55, pr. syn.

HABITAT.—Alaska; Hudson's Bay Territory; Wisconsin.

I have seen none of the types, and give the synonymy as I find it.

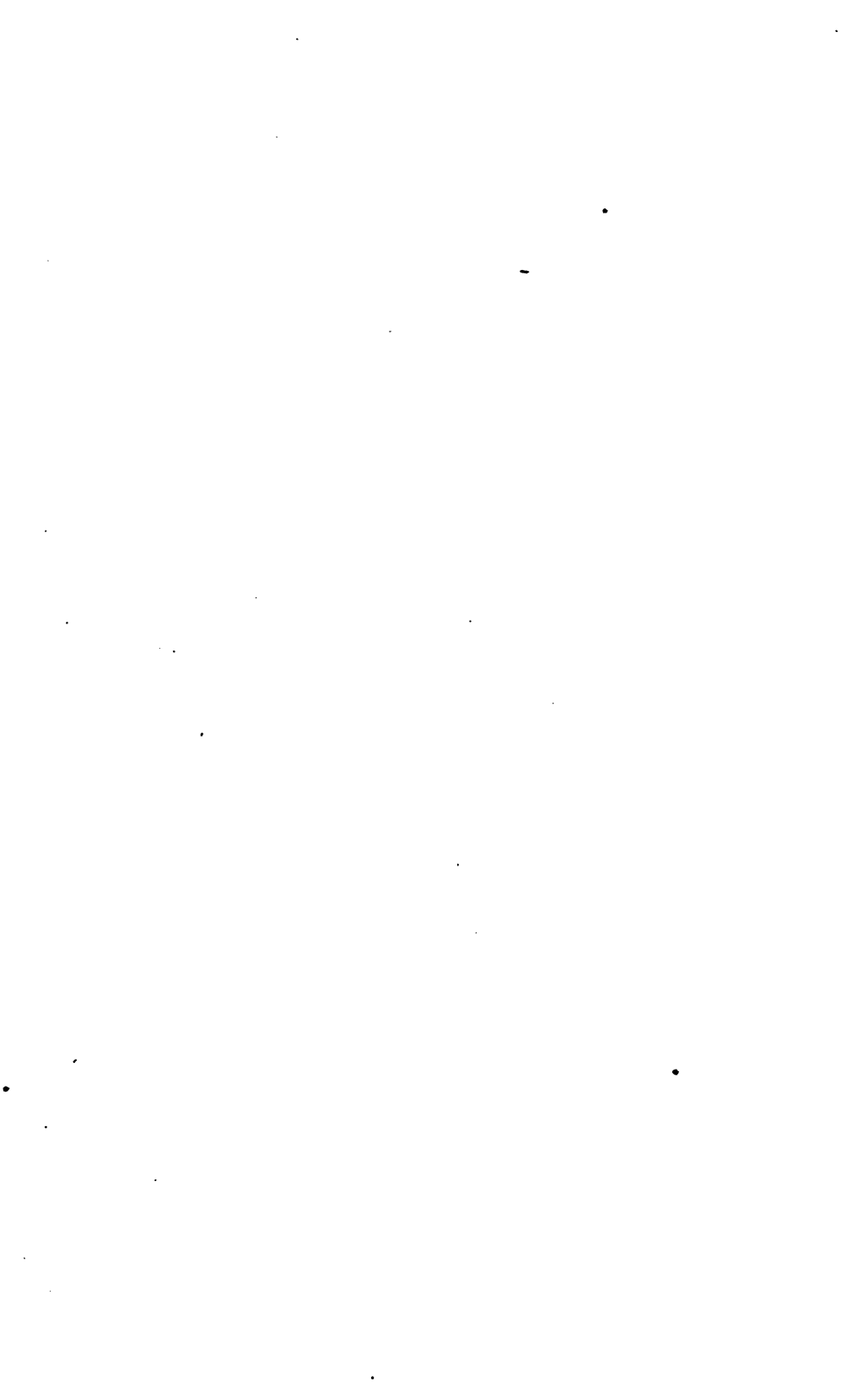
L. middendorfi Mén.

1859. Mén., in Schrenk's Reise, 66, pl. 5, f. 9, *Amphidasis*.

1883. Moeschl., Stett. Ent. Zeit., XLIV, 117, *Brephos*.

HABITAT.—Labrador.

I have seen specimens called *middendorfi* by Mœschler, but have not seen Siberian specimens to compare with them.



GENERAL INDEX.

[The object has been to refer to every name used in the body of the work. Family terms are in CAPITALS; generic names begin with a Capital in all cases, while species, varieties, and aberrations are always in lower-case type. Synonyms are in *italics*, and those of genera begin with a Capital. Specific and varietal names are indexed as often as they occur. Generic terms are referred to the page where the list of species begins, or, if a synonym, to the page containing the leading species.]

A.	Page.		Page.
Abagrotis.....	60	<i>adonea</i>	188
abalinealis.....	391	<i>Adonisæa</i>	288
abbreviata.....	335	<i>adoptiva</i>	337
abdominalis.....	298	<i>adriana</i>	338
<i>abjecta</i>	136	<i>adultera</i>	354
<i>Ablepharon</i>	34	<i>adumbrata</i>	323
abnormis.....	79	<i>advena</i>	267
<i>abrasa</i>	27	<i>adversa</i>	318
<i>abrostella</i>	240	<i>Aedia</i>	326
Abrostola.....	246	<i>aedon</i>	165
abrostoloides.....	240	<i>Aedophron</i>	268
abrupta.....	32	<i>ægrotata</i>	321
abseidum.....	267	<i>æmula</i>	379
absorptalis.....	380	<i>ænelpennis</i>	83
abtrusellus.....	395	<i>Enigma</i>	316
acadiensis.....	292	<i>æqualis</i>	88
accepta.....	303	<i>æquilinea</i>	212
acclivis.....	79	<i>seræa</i>	247
accurata.....	257	<i>seria</i>	312
acerba.....	302	<i>seroides</i>	247
acericola.....	41	<i>seruginea</i>	373
<i>aceris</i>	40, 41	<i>ætheria</i>	3.3
<i>Acerra</i>	207	<i>æfinis</i>	347
achatinalis.....	391	<i>afflicta</i>	42
Achatodes.....	179	<i>Agarista</i>	367
<i>Acolasia</i>	364	<i>Agassizia</i>	366
Acontia.....	298	<i>agilis</i>	83
Acopa.....	264	<i>Agnomonis</i>	360
Acronycta.....	35	<i>Agrapha</i>	247
acronyctoides.....	31	<i>agrestis</i>	78
Actinotis.....	167	<i>agricola</i>	317
<i>acutalis</i>	192	<i>Agriphila</i>	192
<i>acutaria</i>	192	<i>agrippina</i>	352
acutilinea.....	277	<i>Agrophila</i>	304
acutipennis.....	128	<i>agrotiformis</i>	200
acutissima.....	167	<i>agrotipennis</i>	328
addenda.....	204	<i>agrotiphila</i>	110
Adelphagrotis.....	57	<i>AGROTIS</i>	50
<i>Adipseophanes</i>	194	<i>Agrotis</i>	65
Adita.....	158	<i>aholah</i>	333
adjuncta.....	47, 122	<i>aholibah</i>	339
<i>adjuta</i>	188	<i>alabama</i>	332
Admetovis.....	113	<i>alabamæ</i>	70
adnixa.....	142	<i>Alaria</i>	272
		<i>alaskæ</i>	110

	Page.		Page.
albafascia	279	<i>Andreucia</i>	330
albulia	80	androgena	169
albarufa	38	andromache	336
albicoستا	80	andromeda	328
albidentina	269	<i>androphila</i>	331
albidula	309	angulalis	385
<i>albifusa</i>	119	angulata	209
albillinea	186	<i>angulata</i>	216
albina	138	angulidens	255
albipennis	103	anguina	128
<i>albispinatis</i>	392	angust	353
albofasciata	370	angustiorata	181
alboguttata	126	angustipennis	299
albolabes	154	<i>Anicla</i>	70
albopunctata	394	anilla	360
albopunctella	194	<i>anna</i>	336
albovenosa	34	<i>Annaphila</i>	296
album	268	annexa, Feltia	84
Aletia	243	annexa, Euclidia	319
aleucis	275	<i>annida</i>	349
algens	147	annulalis	391
<i>algida</i>	293	annulimacula	204
alia	205	annulipes	98
alleni	323	anodonta	170
<i>Allotria</i>	330	Anomis	241
allusa	342	<i>Anomogyna</i>	147
alterna	257	Anorthodes	198
alternata	53	Antaplagia	265
alticola, Xylophasia	136	antennata, Xylina	228
alticola, Caloplusia	258	antennata, Xylophasia	140
alticola, Carneades	101	<i>anteposita</i>	84
alutalis	387	<i>Anthracia</i>	274
amaryllis	290	<i>Anthracia</i>	372
amasia	323	Antiblemna	366
<i>anaria</i>	333, 334	antica	201
<i>Anathes</i>	71, 72	Anticarsia	365
<i>anatrix</i>	340	<i>anticostiensis</i>	28
anatrix	344	antinymphe	347
ambigua	395	antipoda	256
amella	372	Anytus	109
americana, Epizeuxis	379	<i>Apamea</i>	173
<i>americana, Aeronicta</i>	43	apamiformis	131
americana, Aeronicta	40	<i>Apatela</i>	35
<i>americana, Hydrea</i>	175	aplata	222
americana, Orthosia	219	apicalis, Grammodes	319
anestrus	336	apicalis, Rhynchagrotia	80
anica	330	apicella	302
<i>anica</i>	138	apicosa	311
<i>anicula</i>	296	<i>Aplecta</i>	57, 58, 59, 68
<i>anisa</i>	294	Aporophyla	163
Ammaconia	108	appassionata	178
Amolita	193	apposita	58
<i>Amphidaria</i>	397	aprica	298
Amphipyra	196	<i>apricans</i>	316
ampla	256	<i>aqualis</i>	162
<i>amplissima</i>	317, 360	<i>aquamarina</i>	318
amplus	291	<i>aracanthalis</i>	385
<i>amputatrix</i>	138	aratrix	108
<i>amygdalina</i>	187	<i>Archicaris</i>	356
Amyna	244	arcifera	280
Anarta	202	<i>areigera</i>	230
Anchocella	215	arctica, Platagrotia	58
anchocelloides	52	arctica, Xylophasia	137
<i>anchocelloides</i>	221	<i>Arctomyia</i>	45
<i>ancociconensis</i>	155	arcuata	145

	Page.		Page.
ardoris	301	aurelia	537
arefacta	276	auroolum	282
argenteilinea	308	auripennis	361
argillacea	243	aurulenta	66
Argillophora	375	australis	30
Argyrogramma	250	Autographa	250
Argyroetrotis	360	autumnalis	168
arietis	115	auxiliaris	78
arizona	248	Axenus	291
arizone, Acontia	300	Azenia	302
arizone, Catocala	345		
arizone	346	D.	
armata	183	bahayaga	346
armiger	270	badia	348
arna	156	badicollis	61
arrosa	364	nadinodis	65
Arsilonce	34	badistriga	158
Arthrochlora	33	baileiana	58
arthrolita	204	baileyi	229
arvalis	291	baja	79
arvalis	297	balba	277
Arzama	181	balinitis	79
Astys	193	baliole	174
asopialis	385	balluca	248
aspasia	345	Balsa	193
aspera	166	baltimoralis	390
Aspila	268	Bankia	810
assimilis, Mamestra	121	Barathra	113
assimilis, Tricholita	298	basalis, Carneades	104
associans	77	basalis, Catocala	348
asteroides	237	basicinerea	815
Astraptes	132	basiflava	101
astricta	68	basigera	255
atarah	332	basilinea	134
aterrima	163	Basilodes	261
Atethmia	213	batis	27
athabasca	322	beaniana	341
atlantica	117	beanii	123
atomaria	245	beata	77
atomaris, Carneades	92	behrensi	160
atomaris, Phoberia	355	Behrensia	246
atra	173	behrensiana	208
atrata	191	bélangeri	220
atriciliata	184	belfragei, Renia	388
atricollaris	162	belfragel, Rhynchagrotis	53
atricornis	164	belfragiana, Catocala	330
atrifasciata	159	bella	124
atrifera	107	belladonna	287
atrifrons	77	bellicula	309
atrilineella	383	Bellura	181
atristigata	91	Bendis	364
atrites	283	benesignata	371
atritincta	370	benigna	154
atropurpurea	103	benignalis	390
attenta	60	Berresa	244
Auckmis	232	Beasula	266
Auckmis	167	bethunei	227
Audela	31	betule	37
augur	75	bianca	346
angusta	341	bicarnea	71
angustus	159	biclavis	91
aurantiaca	297	bicollaris	90
aurantiago	219	bicolorago	218
auranticolor	140	bicolorago	218
aurea	149	bicolorata	185

	Page.		Page.
<i>bienaspila</i>	282	<i>brunneipennis</i>	52
<i>bicycla</i>	292	<i>Bryophila</i>	49
<i>bifascia</i>	276	<i>bucetum</i>	356
<i>bifasciata</i>	95	<i>buffaloensis</i>	179
<i>bifasciata</i>	357	<i>bullula</i>	244
<i>biferalis</i>	389	<i>bunkerii</i>	337
<i>bifidalis</i>	305	<i>burgessi</i>	132
<i>biformata</i>	321	<i>busca</i>	213
<i>bijugalis</i>	391		
<i>biloba</i>	249	C.	
<i>bilunata</i>	195	<i>caenunialis</i>	389
<i>bimaculata</i>	249	<i>cadmia</i>	260
<i>bimarginalis</i>	54	<i>caduca</i>	311
<i>bimatrix</i>	266	<i>caducalis</i>	393
<i>bina</i>	290	<i>cacalis</i>	395
<i>binocula</i>	300	<i>caenis</i>	94
<i>binominalis</i>	55	<i>Caenurgia</i>	318
<i>binotata</i>	142	<i>cærulea</i>	318
<i>biplaga</i>	208	<i>caiami</i>	212
<i>biplaga</i>	312	<i>calaminea</i>	354
<i>bipuncta</i>	191	<i>californica, Antocala</i>	343
<i>bipunctata</i>	243	<i>californica, Capnodes</i>	365
<i>birivia</i>	93	<i>californica, Hypena</i>	394
<i>bistrialis</i>	192	<i>californica, Orrhoia</i>	223
<i>bistriaris</i>	360	<i>californica, Plusia</i>	252
<i>bistriga</i>	238	<i>californica, Dryobata</i>	233
<i>bistrigata</i>	357	<i>californicus, Melicleptria</i>	289
<i>blanula</i>	232	<i>californicus, Brephos</i>	396
<i>biundulata</i>	265	<i>callida</i>	190
<i>biundulata, Antaeola</i>	265	<i>Callierys</i>	155
<i>biundulata, Schinia</i>	275	<i>Callierys</i>	169
<i>bivittata</i>	383	<i>Callopietria</i>	399
<i>blanda</i>	210	<i>Calobochila</i>	384
<i>liandula</i>	335	<i>Calocampa</i>	235
<i>Bleptina</i>	389	<i>Calophasia</i>	156
<i>bochus</i>	90	<i>Caloplusia</i>	258
<i>Bolina</i>	326	<i>Calpe</i>	259
<i>bolit</i>	67	<i>calphurnia</i>	337
<i>bombyceiformis</i>	112	<i>calycanthata</i>	370
<i>Bombyla</i>	29	<i>calycanthata</i>	367
<i>Bomolocha</i>	390	<i>Calymnia</i>	212
<i>borea</i>	137	<i>campestris</i>	102
<i>borealis</i>	112	<i>Campometra</i>	372
<i>borealis</i>	378	<i>canadensis, Manestra</i>	118
<i>bostoniensis</i>	94	<i>canadensis, Calpe</i>	259
<i>brachiolum</i>	123	<i>canalis</i>	366
<i>Brachytania</i>	193	<i>candefacta</i>	209
<i>bractea</i>	248	<i>candens</i>	198
<i>brassicæ</i>	121	<i>candida</i>	29
<i>brassicæ</i>	253	<i>canescens</i>	214
<i>brephoides</i>	397	<i>Canidia</i>	274, 285
<i>Brephos</i>	396	<i>caniplaga</i>	29
<i>brevipennis</i>	89	<i>capax</i>	230
<i>brevirostralis</i>	387	<i>Capis</i>	386
<i>brevia</i>	283	<i>Capnodes</i>	365
<i>bridghami</i>	141	<i>capella</i>	203
<i>brisels</i>	342	<i>capsularis</i>	117
<i>brocha</i>	90	<i>captivola</i>	322
<i>Bretolomia</i>	171	<i>cara</i>	344
<i>brucei, Calocampa</i>	236	<i>Caradrina</i>	195
<i>brucei, Schinia</i>	278	<i>caradrinalis</i>	389
<i>brunnea</i>	41	<i>carbonaria</i>	230
<i>brunnea</i>	43	<i>carina</i>	264
<i>brunneicollis</i>	51	<i>cariosa</i>	139
<i>brunneigera</i>	98	<i>carissima, Rhynchagrotis</i>	54

	Page.		Page.
carlissima, Catocala	344	chortalia	108
carmelita	313	chrysalectra	147
carminata	202	chrysellus	274
carnosina	279	chrysopsis	261
carnea	64	<i>Chytolita</i>	381
<i>Carneades</i>	88	Chytonix	50
carneicosta	361	Chytoryza	244
carneola, Erastria	312	cibalis	162
carneola, Ogdoconta	246	cicatricosa	88
carnosa	220	ciliaca	216
<i>Caranca</i>	194	Cilla	193
cassaudra	345	cinderella	238
casta	206	cinefacta	140
castanea	138	cinerascens	64
Catabapta	347	cinerea, Xylina	228
Catabena	194	cinerea, Homoptera	371
cataphracta	176	cinerea, Pachnobia	64
catenula	85	<i>cinereocyllis</i>	77
<i>catherina</i>	62	<i>cinereomaculata</i>	133, 104
Catocala	329	cinerola	245
<i>Catocalirrhus</i>	330	cinerosa	229
Cea	214	cineritia	236
<i>Celana</i>	144	cingulata	28
celeria	288	cingulifera	370
cella	338	<i>cinis</i>	327
Celiptera	355	<i>cinnabarina</i>	125
celsa	255	<i>circe</i>	338
centralia	140	<i>circellaris</i>	219
<i>centralis</i>	388	<i>circulifera</i>	33
centuriella	395	circumcincta	125
cephalica	286	circumdاتا	82
<i>cephalica</i>	149	Cirrhobolina	325
<i>Ceramica</i>	120	Cirrhophanus	261
Cerastis	221	Cirruedia	224
cerina	176	Cissusa	320
cerintha	301	<i>cita</i>	238
Cerna	47	<i>citata</i>	392
cerogama	337	citina, Phalaenostola	377
ceromatica	225	citina, Orthosia	219
cernasata	178	<i>Citria</i>	223
cervina, Synedroides	320	citricolor	92
cervina, Euberridia	308	citronellus	272
chalconia	150	<i>civica</i>	196
Chamaelea	271	clandestina	75
Chamyris	301	<i>Clanyma</i>	385
chandleri	161	clara	151
characta	143	<i>clarescens</i>	44
Charadra	32	clauda	302
<i>chardinyi</i>	51	claudens	142
<i>Chariclea</i>	216	claufacta	153
<i>Chariptera</i>	47	clausula	303
chartaria	122	<i>claviformis</i>	63
chelidonia	333	claviplena	116
<i>chenopii</i>	119	clemens	75
Chera	93	Cleoceria	215
<i>Chersotis</i>	74	cleopatra	343
chionanthi	158	Cleophana	236
Chloridea	268	<i>Cleophana</i>	160
chloropha	220	Cleptomita	383
chlorostigma	145	clientis	374
chorda	157	clintonii	335
Choephora	211	clitosalis	388
choria	97	<i>Clantha</i>	167
<i>choris</i>	93	clonanthoides	80
Chorizagrotia	78	<i>clodiana</i>	83

	Page.		Page.
<i>cloniasalis</i>	389	<i>conspicua</i>	339
<i>Clytis</i>	191	<i>constans</i>	332
<i>c-nigrum</i>	72	<i>constipata</i>	127
<i>coccinata</i>	338	<i>constricta</i>	283
<i>coccineifascia</i>	307	<i>constricta</i>	296
<i>cochrani</i>	96	<i>contacta</i>	166
<i>coelebs</i>	348	<i>contempta</i>	358
<i>coercita</i>	277	<i>contenta</i>	228
<i>cogitans</i>	90	<i>contenta, Hadena</i>	133
<i>cogitata</i>	135	<i>contenta, Manestra</i>	136
<i>colata</i>	106	<i>contexta</i>	248
<i>collaris</i>	74	<i>contigua</i>	33
<i>coloradensis</i>	32	<i>continens</i>	154
<i>colorado, Agrotophila</i>	110	<i>contracta</i>	374
<i>colorado, Oncocnemis</i>	161	<i>contracta</i>	282
<i>columbia</i>	202	<i>contrahens</i>	200
<i>combinata</i>	362	<i>contraria, Xylina</i>	155
<i>Comidata</i>	260	<i>contraria, Mythimna</i>	120
<i>comis</i>	125	<i>convalescens</i>	218
<i>commelinæ</i>	169	<i>convexipennis</i>	236
<i>commelinæ</i>	170	<i>conviva</i>	196
<i>commoda</i>	153	<i>Copablepharon</i>	267
<i>commoides</i>	188	<i>Copihadena</i>	162
<i>communis</i>	349	<i>Copimamestra</i>	113
<i>comosa</i>	95	<i>Copipanolis</i>	112
<i>comparata</i>	59	<i>Copivaleria</i>	111
<i>completa</i>	173	<i>Coptocnemis</i>	362
<i>composita</i>	266	<i>coracias</i>	373
<i>compressipalpis</i>	260	<i>cordelia</i>	324
<i>comstocki</i>	34	<i>cordigera</i>	292
<i>conchiformis</i>	246	<i>Coriace</i>	330
<i>conchis</i>	71	<i>cornix</i>	373
<i>concinna</i>	284	<i>cornuta</i>	210
<i>concinnumacula</i>	310	<i>corrusca</i>	257
<i>concta</i>	379	<i>corticiosa</i>	49
<i>concupiens</i>	344	<i>Cosmia</i>	214
<i>Condia</i>	153	<i>Cosmophila</i>	241
<i>condita</i>	59	<i>costata</i>	55
<i>conducta</i>	242	<i>Crambodes</i>	194
<i>confederata</i>	153	<i>Crambus</i>	394
<i>confinisalis</i>	307	<i>crasia</i>	147
<i>confingens</i>	245	<i>crassatus</i>	305
<i>confusa</i>	72	<i>crassiuscula</i>	317
<i>confluens</i>	205	<i>cratægi</i>	334
<i>conformis</i>	230	<i>crenilinea</i>	281
<i>confracta</i>	96	<i>crenulata, Rhynchagrotis</i>	56
<i>confragosa</i>	106	<i>crenulata, Orthodes</i>	198
<i>confusa, Morrisonia</i>	232	<i>cresonii</i>	361
<i>confusa, Rhynchagrotis</i>	57	<i>cretata</i>	300
<i>confusa, Catocala</i>	339	<i>crispa</i>	217
<i>congermana</i>	120	<i>cristata, Homophoberia</i>	355
<i>congesta</i>	213	<i>cristata, Xylophasia</i>	140
<i>congrua</i>	65	<i>cristatrix</i>	241
<i>conjugens</i>	194	<i>cristifera</i>	121
<i>conjuncta</i>	98	<i>crocea</i>	148
<i>connecta</i>	43	<i>Croctiphora</i>	359
<i>connubialis</i>	334	<i>Crocigrapha</i>	201
<i>conradi</i>	219	<i>crotchii</i>	116
<i>conserta</i>	235	<i>crotchii</i>	280
<i>Conservula</i>	170	<i>crucialis</i>	233
<i>consobrina</i>	319	<i>crudelis</i>	374
<i>consopita</i>	202	<i>cruralis</i>	382
<i>consors</i>	336	<i>crustaria</i>	273
<i>conspersa</i>	197	<i>Crymodes</i>	137
<i>conspicua</i>	132	<i>Cryphia</i>	49

	Page.		Page.
<i>cubicularis</i>	196	<i>deducta</i>	325
<i>cubilis</i>	112	<i>defecta</i>	183
<i>Cucullia</i>	236	<i>defossa</i>	122
<i>cuculliformis</i>	139	<i>dejecta</i>	351
<i>culea</i>	202	<i>delecta</i>	301
<i>enlta</i>	251	<i>deleta, Fruva</i>	303
<i>cumatilla</i>	275	<i>deleta, Poaphila</i>	358
<i>cunearis</i>	326	<i>deleta</i>	223
<i>cuneata</i>	127	<i>delicata</i>	148
<i>cupes</i>	280	<i>delilah</i>	337
<i>cupida</i>	52	<i>delineata</i>	240
<i>cupidissima</i>	56	<i>Demas</i>	32
<i>cupidissima</i>	53	<i>demissa</i>	121
<i>cuprea</i>	108, 109	<i>densa</i>	181
<i>curialis, Barathra</i>	113	<i>dentalis</i>	213
<i>curialis, Xylomigea</i>	233	<i>dentata</i>	37
<i>cariosum</i>	202	<i>dortatella</i>	164
<i>curta</i>	294	<i>denticulalis</i>	378
<i>curtica</i>	203	<i>dentifera</i>	239
<i>curvata</i>	142	<i>depicta</i>	296
<i>curvata, Catocala</i>	351	<i>deplis</i>	112
<i>curvata, Capla</i>	386	<i>derasa</i>	27
<i>curvicollis</i>	162	<i>Dercetis</i>	396
<i>curvifascia</i>	215	<i>deridens</i>	32
<i>curvimacula</i>	236	<i>derogata</i>	242
<i>cuspea</i>	319	<i>derosa</i>	195
<i>Cutina</i>	194	<i>Derrima</i>	271
<i>Cyathissa</i>	50	<i>derupta</i>	169
<i>cylindrica</i>	146	<i>desdemona</i>	337
<i>Cymatophora</i>	29	<i>deserta, Homohadena</i>	157
<i>cymatophoroides</i>	28	<i>deserta, Litocala</i>	322
<i>cymosa</i>	138	<i>designata</i>	283
<i>cynica</i>	198	<i>desperata, Mamestra</i>	117
		<i>desperata, Catocala</i>	351
D.		<i>destructor</i>	132
<i>dactylina</i>	40	<i>determinata</i>	115
<i>dactylus</i>	87	<i>detersa</i>	94
<i>daktis</i>	72, 73	<i>deteras</i>	142
<i>dama</i>	305	<i>detesta</i>	93
<i>damalis</i>	112	<i>detracta</i>	116
<i>damnosalis</i>	393	<i>detracta</i>	110
<i>daniatica</i>	297	<i>detrehens</i>	364
<i>dapsilis</i>	67	<i>Deva</i>	246
<i>Dargida</i>	170	<i>devastatrix</i>	136
<i>Dasyapouda</i>	286	<i>devergens</i>	259
<i>dayi</i>	158	<i>devia</i>	226
<i>debilis</i>	299	<i>dia</i>	187
<i>decia</i>	290	<i>diana</i>	344
<i>decepta</i>	209	<i>Dianthæcia</i>	115
<i>decepta</i>	210	<i>Diarsia</i>	64
<i>deceptalis</i>	393	<i>diacema</i>	256
<i>deceptrialis</i>	380	<i>Diastema</i>	245
<i>decernens</i>	84	<i>Dichagramma</i>	226
<i>decipiens, Orthosia</i>	217	<i>Dicois</i>	111
<i>decipiens, Richia</i>	108	<i>diferta</i>	219
<i>declarans</i>	371	<i>diffuso</i>	137
<i>declarata</i>	46	<i>diffusa, Bellura</i>	181
<i>declarata</i>	102	<i>diffusa, Schinia</i>	279
<i>declinata</i>	240	<i>diffusa</i>	186
<i>decliva</i>	222	<i>diffusilis</i>	166
<i>decolor</i>	102	<i>digitalis, Anchoelis</i>	215
<i>decora</i>	83	<i>digitalis, Schinia</i>	283
<i>decoralis</i>	377	<i>digna</i>	70
<i>decorata</i>	394	<i>dilecta</i>	154
<i>decorata</i>	339	<i>dilucida</i>	61

	Page.		Page.
epipaschia.....	157	evanidalis.....	394
Epizeuxis.....	379	evanidum.....	34
epopea.....	152	evelina, Hadena.....	141
<i>Epunda</i>	215	evelina, Catocala.....	352
erasa.....	359	ovieta.....	232
Erastris.....	309	exacta.....	241
erastroides.....	299	exaltata.....	278
erdmani.....	147	Ezarnis.....	137
Erebus.....	366	excellens.....	106
erecta.....	316	exesa.....	150
erecta.....	127	exilis.....	44
erecta.....	213	exornata.....	134
erectalis.....	395	expallidus.....	264
erepta.....	175	expansa.....	172
erichto.....	317	expolita.....	298
eridania.....	169	exprimens.....	216
erionis.....	72	expulsa.....	162
<i>Eriopus</i>	308	expultrix.....	28
erosa.....	241	exsertistigma.....	55
<i>Erotyla</i>	302	exsertistigma.....	55, 57
errans.....	284	externa, Leucania.....	169
erratica.....	60	externa, Euclidia.....	314
erycata.....	376	externa.....	142
erythrolita.....	208	extima.....	196
erythrostigma.....	175	extincta.....	187
Escaria.....	302	extranea.....	95
esaurialis.....	72	extranea.....	189
Eubolina.....	372	extrinxis.....	160
Eucalyptera.....	191	extricata.....	45
<i>Eucirraea</i>	224	exulls.....	137
Euclidia.....	319	ezusta.....	129
Encoptocnemis.....	109	Exyra.....	306
endlopta.....	170		
<i>Euedwardsia</i>	290		
Euerettagrotis.....	60		
<i>Euglyphia</i>	189		
Euberrichia.....	308		
<i>Euhypena</i>	392		
eulepis.....	236		
<i>Euleucyptera</i>	274		
<i>Eulintneria</i>	395		
<i>Eulithia</i>	266		
<i>Eulonche</i>	46		
eumelusalis.....	384		
Eumecletia.....	313		
<i>Eumtia</i>	338, 339		
<i>Eupanychia</i>	281		
Euparthenos.....	330		
<i>Euperia</i>	212		
<i>Euphemias</i>	224		
Euplexia.....	171		
<i>Euprophocetes</i>	170		
<i>Euprilia</i>	226		
euroa.....	218		
<i>euroides</i>	101		
<i>Eurois</i>	58, 59, 68		
<i>Euros</i>	286		
<i>Eustrotia</i>	309		
Eutelia.....	239		
Euthisanotia.....	180		
Euthyatira.....	27		
Eutolypa.....	112		
Eutoreuma.....	365		
<i>Eutricopsis</i>	291		
evanidalis.....	82		
		F.	
		fabrefacta.....	153
		faceta.....	324
		factionalis.....	388
		facula.....	55
		fagina.....	228
		Fagitana.....	356
		Fala.....	264
		falcata.....	149
		falcifera.....	254
		falcigera.....	254
		faleula.....	38
		fallacialis.....	386
		fallax.....	34
		fallax.....	33
		falsa.....	153
		faretta.....	188
		farnhami.....	116
		fasciata, Perigea.....	154
		fasciata, Heliaca.....	291
		fasciata, Copipanolis.....	113
		fasciata, Ulonche.....	130
		fasciata.....	41
		fasciatella.....	302
		fasciatus.....	159
		fascicularis.....	326, 327
		fasciolaria.....	326
		fastidiosa.....	284
		fastuosa.....	180
		faustina.....	341
		fauna.....	98
		fax.....	300

	Page.		Page.
februalis	33	fragosa	196
fecialis	391	francisca	342
felina	39	fratella	252
Feltia	80	frater	32
fenuacea	95	fratercula	332
fennica	74	frazini	346
Feralia	33	frederici	336
fernaldi	100	friabilla	99
ferrea	125, 144	frugiperda	168
ferrealis, Mamestra	128	frustulum	355
ferrealis, Xylina	227	Fruxa	302
ferruginoides	218	fulminans	209
ferruginoides	63	fulvosa	168
fessa	193	fumalis	91
festa	47	fumosa	143
festiva	180	fumosum	34
festivoides	149	funebria	295
fibrosa	173	funeralis, Acronycta	43
fibulata	142	funeralis, Spraguea	305
fidelis	201	fungorum	211
fidicularia	196	furcifera, Agrotis	90
figurata	157	furcifera, Acronycta	37
fibularis	86, 109	furcilla, Platycerura	31
finis	92	furcilla, Argillophora	375
finitima	134	furfurata	201
Fishia	167	furtivus	105
fishii	64	fusca	86
fiatula	173	fuscescens	240
fiabella	240	fuscigera	99
fiabilis	189	fusculeta	116
fiagellum	251	fuscimacula	151
fiamicincta	313	fusimacula	107
fiava	148	futills	245
fiavago	223		
fiavicollis	90		
fiavicornis	32	G.	
fiavidalis	349	Gaberasa	395
fiavideus, Pseudanarta	149	gagates	92
fiavidens, Carneades	90	galbanata	370
fiaviguttata	310	Galgula	314
fiavimaculata	168	gamma	251
fiacimedia	170	Gargaza	193
fiavipennis	298	garmani	206
fiavipunctalis	388	gausapata	227
fiavistriaria	359	gelata	137
fiavofasciata	314	gelida	29
fiabilis	351	gelida	137
fietcheri	234	gemina, Notodonta	111
fiexilis	78	gemina, Hadena	132
fiocalis	362	gemmatilis	365
fiorea	237	generalis	386
fiorida	272	genetrix	143
fioridensis	309	genialis	141
fioridiana	150	geniculata	66
fiodiens	183	gentilis	217
fiormalis	55	geometralis	362
fiormosa	249	geometroides	377
fiormula	333	georgii	228
fiorigens	355	georgica	303
fiortis	161	germana, Annaphila	296
fiortunata	314	germana, Lithonia	235
fiota	183	germanalis	394
fiotella	195	gigantea	31
fiuctilinea	144	gilvipennis	51
fiagilis	48	gisela	333
		giabella	197

	Page.		Page.
<i>glaciata</i>	122	<i>Hadenella</i>	164
<i>gladiaria</i>	82	<i>hadeniformis</i>	327
<i>Gleba</i>	221	<i>hesitans</i>	63
<i>glans</i>	358	<i>hesitata</i>	44
<i>glaucovaria</i>	119	<i>hamadryas</i>	396
<i>glennyi</i>	160	<i>hamamella</i>	44
<i>Gluphisia</i>	29	<i>hamifera</i>	218
<i>gloriosa</i>	280	<i>hamifera</i>	250
<i>Glottula</i>	180	<i>Hapalia</i>	126
<i>gnata</i>	116	<i>Haploolophus</i>	308
<i>goasalia</i>	383	<i>harrisii</i>	177
<i>Gonodonta</i>	259	<i>Harrisimemna</i>	47
<i>Gonophora</i>	27	<i>hartmanni</i>	238
<i>Gonoptera</i>	224	<i>harnspica</i>	74
<i>goodelli</i>	124	<i>Harveya</i>	361
<i>Gortyna</i>	173	<i>harveyana</i>	39
<i>Gortyna</i>	179	<i>harveyi</i>	186
<i>gortynides</i>	181	<i>hasta</i>	36
<i>grata</i>	151	<i>hastingsii</i>	324
<i>gracilenta</i>	276	<i>hastulifera</i>	41
<i>gracillima</i>	162	<i>hastulifera</i>	41
<i>gracillima</i>	185	<i>batuey</i>	245
<i>gracilis</i>	331	<i>hansta</i>	146
<i>gracilana</i>	225	<i>havila</i>	76
<i>gracilana</i>	288	<i>hayesi</i>	158
<i>gracili</i>	38	<i>hebraea</i>	48
<i>grammivora</i>	170	<i>hebraicum</i>	48
<i>Grammodes</i>	319	<i>Hecatera</i>	126
<i>Grammophora</i>	47, 48	<i>helene</i>	335
<i>grandipennis</i>	60	<i>Helia</i>	378
<i>grandipuncta</i>	243	<i>Heliaca</i>	291
<i>grandirena</i>	327	<i>Heliocellus</i>	269
<i>grandis</i>	118	<i>Heliadora</i>	273
<i>grandis</i> , <i>Agrotis</i>	75	<i>Heliolonche</i>	289
<i>grandis</i> , <i>Aedophron</i>	267	<i>Heliophana</i>	290
<i>granitosa</i>	308	<i>Heliophila</i>	185
<i>graphica</i>	322	<i>Heliophobus</i>	106
<i>Graphiphora</i>	201-208	<i>Heliotesa</i>	289
<i>gravis</i>	83	<i>Heliopsis</i>	270
<i>griva</i>	332	<i>heliothis</i>	270
<i>grisea</i>	37	<i>heliusalis</i>	388
<i>griseicollis</i>	163	<i>Helotropha</i>	172
<i>griseipennis</i>	365	<i>helva</i>	219
<i>griseocincta</i>	199	<i>Hemeroplanis</i>	362
<i>grønlandica</i> , <i>Hadena</i>	137	<i>Hemiceras</i>	260
<i>grønlandica</i> , <i>Plusia</i>	254	<i>hemina</i>	227
<i>grotei</i> , <i>Valeria</i>	111	<i>henrici</i>	34
<i>grotei</i> , <i>Xylina</i>	229	<i>henrietta</i>	271
<i>groteiana</i>	342	<i>hepara</i>	314
<i>Grotella</i>	266	<i>herbacea</i>	57
<i>grynea</i>	332	<i>herbarum</i>	357
<i>guenei</i>	352	<i>herbicola</i>	359
<i>gularis</i>	104	<i>herbimacula</i>	124
<i>gularis</i>	213	<i>herilis</i>	82
<i>guttata</i>	305	<i>hermia</i>	343
<i>guttula</i>	366	<i>Hermia</i>	381
<i>gyasalis</i>	385	<i>herminiioides</i>	379
<i>gypsalis</i>	380	<i>hero</i> , <i>Agrotis</i>	67
<i>Gyros</i>	315	<i>hero</i> , <i>Catocala</i>	333
		<i>herodias</i>	238
		<i>Herrichia</i>	308
		<i>Heterogramma</i>	385
		<i>hexastylus</i>	364
<i>habilis</i>	348	<i>Hexeris</i>	376
<i>habitalis</i>	363	<i>hibisci</i>	205
<i>Habrosyne</i>	27	<i>hiemalis</i>	233
<i>Hadena</i>	131		

H.

	Page.		Page.
<i>hieroglyphica</i>	180	<i>illabefacta</i>	123
<i>hilaris</i>	67	<i>illapia</i>	77
<i>Hillia</i>	147	<i>illata, Agrotis</i>	104
<i>hilliana</i>	73	<i>illata, Hadenæ</i>	133
<i>hillii, Hypocæla</i>	318	<i>illaudabilis</i>	126
<i>hillii, Catocala</i>	344	<i>illecta</i>	336
<i>hillii</i>	142	<i>illepida</i>	165
<i>Himella</i>	200	<i>illinoisensis</i>	219
<i>hinda</i>	349	<i>illita</i>	242
<i>hinna</i>	364	<i>illiterata</i>	219
<i>hippolyta</i>	341	<i>illocata</i>	164
<i>hircina</i>	220	<i>imbrifera</i>	114
<i>hirtella</i>	281	<i>immaculalis</i>	303
<i>hirtipes</i>	190	<i>immaculata, Cea</i>	214
<i>historialis</i>	363	<i>immaculata, Orthosia</i>	220
<i>histrio</i>	239	<i>immanis</i>	175
<i>hochenwarthi</i>	258	<i>immerens</i>	207
<i>hollemanni</i>	91	<i>immixta</i>	79
<i>homogena</i>	160	<i>immortua</i>	287
<i>Homoglaea</i>	220	<i>impartialis</i>	372
<i>Homohadena</i>	156	<i>impecuniosa</i>	176
<i>Homophoberia</i>	355	<i>imperita</i>	59
<i>Homoptera</i>	368	<i>imperspicua</i>	276
<i>Homopyralis</i>	374	<i>impingens</i>	204
<i>honestæ</i>	289	<i>impleta</i>	42
<i>honestæ</i>	224	<i>implora</i>	302
<i>Hormisa</i>	380	<i>impolita</i>	129
<i>Hornia</i>	378	<i>impressa</i>	41
<i>hornos</i>	260	<i>improvisa</i>	29
<i>horrida</i>	367	<i>impulsa</i>	136
<i>hortulana</i>	83	<i>incallida</i>	98
<i>hospitalis</i>	72	<i>incallida</i>	131
<i>hostia</i>	242	<i>incana</i>	264
<i>howardi</i>	261	<i>incandescens</i>	325
<i>howlandi</i>	324	<i>incerta</i>	205
<i>hoyi</i>	397	<i>incincta</i>	203
<i>hudsonica</i>	322	<i>ineivis</i>	70
<i>hulstia, Schinia</i>	274	<i>inclara</i>	284
<i>hulstii, Hadenæ</i>	134	<i>includens</i>	312
<i>humuli</i>	394	<i>incomitata</i>	156
<i>Hyamia</i>	376	<i>inconcinna, Chorizagrotis</i>	78
<i>Hyblæa</i>	316	<i>inconcinna, Scotogramma</i>	130
<i>Hyblæa</i>	395	<i>inconspicua</i>	173
<i>hybrida</i>	354	<i>inconspicua</i>	142
<i>Hydrelia</i>	309, 312	<i>inconspicualis</i>	380
<i>Hydræcia</i>	173	<i>inconstans, Homohadena</i>	156
<i>Hypena</i>	394	<i>inconstans, Panula</i>	320
<i>Hypenula</i>	389	<i>inereta</i>	44
<i>Hypocæla</i>	318	<i>incurva</i>	126
<i>Hypogramma</i>	328	<i>ineusalis</i>	363
<i>Hyppa</i>	155	<i>indentata</i>	364
<i>Hyporopha</i>	260	<i>indeterminata</i>	57
I.		<i>indiana</i>	231
<i>taspiæ</i>	50	<i>indicans</i>	126
<i>iole</i>	152	<i>indigna</i>	184
<i>idæusalis</i>	392	<i>indigna</i>	257
<i>idahoensis</i>	105	<i>indirecta, Hadenæ</i>	143
<i>Idiadolosa</i>	379	<i>indirecta, Scopelosoma</i>	225
<i>idonea, Agrotis</i>	66	<i>indirecta</i>	96
<i>idonea, Hadenæ</i>	139	<i>indiscreta</i>	355
<i>igneæ</i>	258	<i>indivialis</i>	395
<i>ignobilis</i>	166	<i>indocilis</i>	132
<i>Ilattia</i>	244	<i>inducta</i>	96
<i>illa</i>	339	<i>induta</i>	157
		<i>inelegans</i>	54

	Page.		Page.
<i>inepta</i>	321	<i>intexta</i>	211
<i>inermis</i>	69	<i>intractata</i>	201
<i>inexacta</i>	366	<i>intractata</i>	74
<i>inextricata</i>	96	<i>intractabilis</i>	310
<i>infans</i>	396	<i>intrita</i>	99
<i>infausta</i>	101	<i>introferens</i>	78
<i>infecta, Agrotis</i>	70	<i>inulta</i>	221
<i>infecta, Celena</i>	124	<i>inusta</i>	214
<i>infelix, Perigea</i>	152	<i>invalida</i>	119
<i>infelix, Carneades</i>	106	<i>invenusta</i>	77
<i>inferior, Stretchia</i>	207	<i>involuta</i>	369
<i>inferior, Bleptina</i>	389	<i>Iodia</i>	223
<i>inficita</i>	239	<i>Ipimorpha</i>	212
<i>insidialis</i>	232	<i>irene</i>	343
<i>inimatis</i>	65	<i>iricolor</i>	159
<i>inirma</i>	198	<i>iris</i>	171
<i>infixa</i>	157	<i>irrecta</i>	362
<i>inflata</i>	269	<i>irrenosa</i>	315
<i>inflexa</i>	168	<i>irresoluta</i>	150
<i>infracta</i>	94	<i>irrorata</i>	200
<i>infructuosa</i>	233	<i>irrorata</i>	359
<i>infumata</i>	214	<i>isabella</i>	333
<i>ingeniculata, Syneda</i>	325	<i>islandica</i>	100
<i>ingeniculata, Agrotis</i>	67	<i>islandica</i>	106
<i>ingenua</i>	355	<i>isogona</i>	365
<i>ingura</i>	240		
<i>initialis</i>	111	J.	
<i>inneza</i>	127	<i>jacchusalis</i>	382
<i>innominata</i>	227	<i>jacquenetia</i>	332
<i>innotata</i>	38	<i>jaculifera</i>	81
<i>innotabilis</i>	57	<i>jaculifera</i>	81, 82
<i>innubens</i>	348	<i>jagnarina</i>	280
<i>inops</i>	218	<i>janualis</i>	61
<i>inorata</i>	306	<i>Jaspidea</i>	49
<i>inordinata</i>	141	<i>jasica</i>	341
<i>inornata, Amphipyra</i>	197	<i>jocasta</i>	330
<i>inornata, Trichocosmia</i>	210	<i>Jochearea</i>	43
<i>inquiesita</i>	176	<i>jocosa</i>	33
<i>inquieta</i>	169	<i>jucunda, Noctua</i>	72
<i>inquinata</i>	183	<i>jucunda, Melipotis</i>	328
<i>inaciens</i>	205	<i>judith</i>	350
<i>inscripta</i>	49	<i>julia</i>	272
<i>insertans</i>	89	<i>juncicola</i>	188
<i>insignata, Agrotis</i>	102, 104	<i>juncimacula</i>	114
<i>insignata, Apamea</i>	135	<i>juncta</i>	74
<i>insignis</i>	260	<i>junctura</i>	345
<i>insita</i>	41	<i>junctura</i>	340
<i>insolabilis</i>	353	<i>juvenilis</i>	174
<i>insolens</i>	115		
<i>insolita</i>	46	K.	
<i>insperata</i>	321	<i>kappa</i>	157
<i>instabilis</i>	205	<i>kelloggi</i>	295
<i>insueta</i>	188		
<i>insularis</i>	55	L.	
<i>insula</i>	102	<i>labecula</i>	194
<i>insula</i>	136	<i>labradoriensis</i>	100
<i>integerrima</i>	372	<i>labrosa</i>	251
<i>intenta</i>	370	<i>Lacinia</i>	28
<i>intercalaris</i>	319	<i>laciniosa</i>	300
<i>interjacens</i>	270	<i>lacrymosa</i>	352
<i>intermedia</i>	238	<i>lactipennis</i>	300
<i>interna</i>	148	<i>lacinosa</i>	88
<i>internalis</i>	392	<i>lana</i>	375
<i>interpuncta</i>	384	<i>leta</i>	182
<i>interrupta</i>	46	<i>latitica</i>	237

	Page.		Page.
latula	56	<i>lineata, Anthophila</i>	275
<i>latulus</i>	390	<i>lineata, Nipista</i>	245
laevigata	381	<i>lineatella</i>	169
lagna	80	lineella	331
lambda	230	lineifrons	98
<i>Lamprosia</i>	344	lineolata	184
<i>Lamprosticta</i>	47	lineosa	368
lanceolaria	46	<i>linia</i>	187
lanceolata	299	lintneri	185
<i>languida</i>	288	liquida	116
lanul	285	Lithacodia	309
Laphygma	168	Litholomia	226
lapidaria	187	Lithomia	235
lapponica	294	<i>Lithophane</i>	226
larentioides	377	lithosina	297
larvalis	387	lithospila	45
<i>latebricola</i>	30	Litocala	322
lateritia	134	<i>Litognatha</i>	380
latex	121	Litomitus	256
Lathosea	163	litophora	380
laticinerea	229	Litoprosopus	245
<i>laticlavia</i>	255	<i>Litosea</i>	318
latipes	363	littera	356
<i>latreptana</i>	144	littoralis	62, 63
laudabilis	126	lituralis	380
legitima	123	<i>lixalis</i>	389
<i>Legna</i>	376	lixiva	315
lentiginosa	393	lobelias	36
lenzi	253	<i>loculata</i>	132
leo	304	loculosa	154
lepida	230	Lomanaltes	390
Lepidomya	315	<i>longa</i>	43, 42
lepidula, Bryophila	49	longiclava	128
lepidula, Mamestra	115	longidens	81
Lepipolys	259	<i>longilabris</i>	383
<i>Lepitoreuma</i>	43, 44	longipenne	267
Leptina	30	longula	132
<i>Leptosia</i>	310	lorata	27
lepuaculina	39, 40	lorea	127
Letia	367	<i>lubens</i>	121
Leucania	185	lubricalis	377
<i>Leucanitis</i>	322	lubricans	77
Leucobrephos	397	lucens, Daasyapoudea	286
<i>leucocycla</i>	293	lucens, Hydræcia	175
leucogramma	115	<i>Luceria</i>	131
<i>leucomelana</i>	31	Lucetta	353
leucoscelis	142	<i>lucidata</i>	356
<i>leucostigma</i>	177	luciana	343
levettei	350	<i>lucilla</i>	340
levis	159	lucipara	171
lewisi	106	luctuosa	351
libatrix	224	luna	267
libera	118	lunata, Homoptera	368
liburna	191	lunata, Hydroecia	179
ligata	187	lunifera	368
<i>ligata</i>	127	lunilinea	354
<i>ligni</i>	191	lupatus	281
lignicolor	140	Luperina	131
lilacina	123	lupini	35
lima	357	luridula	242
limbalis	284	<i>lusea</i>	175
limbata	315	Lussa	167
limbolaris	327	lustralis	115
limpida	177, 178	luteicoma	42
linearis	381	<i>luteitinctus</i>	270

	Page.		Page.
<i>luteola</i>	94	<i>meadill</i>	286
<i>luteola</i>	292	<i>media</i> , <i>Synedia</i>	322
<i>lutosa</i>	220	<i>media</i> , <i>Schinia</i>	263
<i>lutulenta</i>	98	<i>medialis</i> , <i>Carneades</i>	95
<i>luxa</i>	266	<i>medialis</i> , <i>Folia</i>	167
<i>luxa</i>	152	<i>meditata</i>	115
<i>luxuriosa</i>	286	<i>Megachyta</i>	380
<i>lycarum</i>	96	<i>Megasema</i>	72
<i>Lygrantheria</i>	274	<i>Meghypena</i>	393
<i>lynx</i>	278	<i>melalenca</i>	202
<i>Lysia</i>	355	<i>melanis</i>	396
M.		<i>melanopa</i>	292
		<i>melanopyga</i>	181
<i>macra</i>	168	<i>melanympha</i>	347
<i>Macrhyphena</i>	393	<i>Melaporphyrta</i>	287
<i>Macronoctua</i>	163	<i>Melicleptria</i>	288
<i>mactata</i>	145	<i>Melipotis</i>	326
<i>n. acula</i>	316	<i>mellitula</i>	331
<i>maculosa</i>	324	<i>membranosa</i>	294
<i>madefactalis</i>	391	<i>mera</i>	297
<i>Madopa</i>	384	<i>meralis</i>	195
<i>maë-tosa</i>	352	<i>mercenaria</i>	78
<i>magdalena</i>	336	<i>Merolonche</i>	85
<i>magdalena</i>	267	<i>mersa</i>	155
<i>magnifica</i> , <i>Bombycia</i>	29	<i>meskeana</i>	284
<i>magnifica</i> , <i>Heliodora</i>	273	<i>meskel</i> , <i>Catocala</i>	340
<i>magnifica</i> , <i>Spragueia</i>	304	<i>meskel</i> , <i>Eubolina</i>	372
<i>Magusa</i>	329	<i>meskei</i>	184
<i>maizi</i>	103	<i>Mesogona</i>	211
<i>major</i> , <i>Ferialia</i>	34	<i>Mesogona</i>	202
<i>major</i> , <i>Onocnemis</i>	162	<i>Mesolomia</i>	171
<i>major</i>	119	<i>messalina</i>	330
<i>malaca</i>	309	<i>messoria</i>	96
<i>malana</i>	198	<i>Metahadena</i>	150
<i>malifida</i>	84	<i>Metalepals</i>	210
<i>Mamestra</i>	114	<i>metallica</i>	248
<i>manalis</i>	390	<i>metallica</i>	301
<i>manifesta</i>	62	<i>Metathorassa</i>	308
<i>manifestolabes</i>	62	<i>metonalis</i>	383
<i>mappa</i>	249	<i>Metoponia</i>	316
<i>Marasmalus</i>	239	<i>mexicana</i>	325
<i>marcida</i>	364	<i>Miana</i>	150
<i>marcidilinea</i>	382	<i>Microcella</i>	48
<i>Mardara</i>	385	<i>micronympha</i>	332
<i>margaritosa</i>	69	<i>micronyx</i>	99
<i>marginata</i>	282	<i>Microphysa</i>	379
<i>marginidens</i>	177	<i>Microphysa</i>	282
<i>marie</i>	312	<i>middendorfi</i>	397
<i>mariana</i>	342	<i>milleri</i>	87
<i>Marimatha</i>	307	<i>mima</i>	372
<i>marina</i>	145	<i>mimallonis</i>	85
<i>marinitincta</i>	126	<i>mimula</i>	295
<i>maritima</i>	270	<i>mimuli</i>	295
<i>marmorata</i>	340	<i>minerea</i>	369
<i>marmorata</i>	137	<i>miniana</i>	273
<i>marinorosa</i>	119	<i>minians</i>	172
<i>Marmorinia</i>	377	<i>minimalis</i> , <i>Rhynchagrotis</i>	52
<i>marshallana</i>	186	<i>minimalis</i> , <i>Zanloguatha</i>	383
<i>Mastiphanes</i>	45	<i>minorata</i> , <i>Fota</i>	183
<i>materna</i>	354	<i>minorata</i> , <i>Mamestra</i>	122
<i>Matigramma</i>	375	<i>minuscule</i>	144
<i>matricaria</i>	239	<i>minuta</i>	331
<i>Matuta</i>	62	<i>minuta</i>	209
<i>matutina</i>	272	<i>mira</i>	335
<i>meadiana</i>	160	<i>mirabilis</i> , <i>Rhynchagrotis</i>	54

	Page.		Page.
mirabilia, Basilodes	282	<i>muratis</i>	111
miranda, Caradrina	195	murdocki	99
miranda, Catocala	351	muricina	208
<i>mirandalis</i>	376	<i>muscosa</i>	94
mirifica	324	<i>muscosula</i>	311
mirificalis	158	musta	311
<i>mirificum</i>	316	<i>mynesalis</i>	381
<i>miscellus</i>	194	myrrha	335
<i>Miscia</i>	122	<i>myrtilli</i>	292
miseloides	145		
misera	144	N.	
miserulata	375	<i>nana</i>	49
misturata	92	<i>nanalis</i>	67
mitis	290	<i>nanata</i>	262
mitographa	392	<i>nape</i>	226
mixta	136	<i>narrata</i>	317
<i>mixtu</i>	58	<i>nasutaria</i>	192
mobilis	152	<i>natatrix</i>	365
<i>moderata</i>	186	<i>navia</i>	263
modesta, Uloloncho	130	<i>navium</i>	263
modesta, Fruva	302	<i>nebraska</i>	343
modica, Acronycta	44	<i>nebris</i>	178
modica, Hadena	146	<i>nebulosa</i>	350
modicella	289	<i>necopina</i>	179
<i>modifica</i>	202	<i>neogama</i>	349
<i>modiola</i>	144	<i>neogama</i>	349
moerens	93	<i>neomexicana</i>	88
moestitiana	225	<i>Nephelodes</i>	172
<i>mollifera</i>	379	<i>nerissa</i>	331
mollis	100	<i>neumægeni</i>	290
mollissima	308	<i>Neumægenia</i>	265
<i>molochina</i>	134	<i>nevada</i>	118
Moma	34	<i>nexilis</i>	291
Momophana	34	<i>ni</i>	233
monetifera	308	<i>nictitans</i>	174
monilis	260	<i>nigrescens</i>	326
monochromatea	62	<i>nigricans</i>	369
<i>Monodes</i>	151	<i>nigricans</i>	103
<i>monodon</i>	251	<i>nigriceps</i>	75
monotropa	373	<i>nigrior</i>	139
<i>montana</i>	110	<i>nigripennis</i>	103
montana	141	<i>nigrireana</i>	277
montana	237	<i>nigritula</i>	311
<i>mopaa</i>	338	<i>nigrocaput</i>	306
morbidalis	381	<i>nigrofimbria</i>	303
morbosa	321	<i>nigrofasciata</i>	169
morigera	247	<i>nigroguttata</i>	167
<i>Mormonia</i>	347	<i>nigroluna'a</i>	293
morna	134	<i>nigrovittata</i>	70
morrisoni	226	<i>nimbosa</i>	114
Morrisonia	231	<i>ninita</i>	199
<i>morrisoniana</i>	82	<i>Nipista</i>	245
<i>mortua</i>	282	<i>nitela</i>	178
morthuorum	254	<i>nitens</i>	199
morula	36	<i>nivaria</i>	294
mucens	231	<i>nivricostatus</i>	356
mucronata	321	<i>nivelguttata</i>	130
muliercula	348	<i>niveilinea</i>	89
multifera	196	<i>nivelreana</i>	154
<i>multifaria</i>	233	<i>niveivenosa</i>	131
multilinea	187	<i>nobilis</i>	282
mundula	313	<i>Noctua</i>	70
<i>mundula</i>	317	<i>Noctuidæ</i>	31
munis	100	<i>noctivaga</i>	42
<i>murculula</i>	85	<i>Nola</i>	193

	Page.		Page.
<i>Nolojana</i>	193	<i>obtusa</i>	71
<i>Nonagria</i>	182	<i>obtusula</i>	316
<i>norma</i>	312	<i>obusta</i>	190
<i>normalis</i>	207	<i>obversa</i>	357
<i>normani</i>	201	<i>obvia</i>	109
<i>normaniana</i>	71	<i>occata</i>	160
<i>Noropais</i>	180	<i>occidens</i>	138
<i>nostra</i>	104	<i>occident</i>	113
<i>notalis</i>	195	<i>occidentalis, Acronyeta</i>	35
<i>notatella</i>	267	<i>occidentalis, Pseudaglossa</i>	378
<i>Notodonta</i>	47	<i>occulta, Peridroma</i>	68
<i>noverra</i>	124	<i>occulta, Syneda</i>	323
<i>nubila</i>	285	<i>ochracea, Xylomiges</i>	234
<i>nubicola</i>	324	<i>ochracea, Syneda</i>	324
<i>nubilifascia</i>	380	<i>ochraceus</i>	291
<i>nuchalis</i>	271	<i>ochrea</i>	317
<i>auceicolora</i>	151	<i>ochreifascia</i>	274
<i>nundina</i>	276	<i>ochreipennis, M. lipotis</i>	326
<i>nupera</i>	235	<i>ochreipennis, Zanclognatha</i>	382
<i>nuptialis</i>	335	<i>Oehria</i>	179
<i>nuptula</i>	332	<i>ochrogaster</i>	104
<i>nurus</i>	345	<i>Ochropleura</i>	74
<i>Nycterophæta</i>	267	<i>octo-scripta</i>	254
<i>Nystalea</i>	231	<i>octo-signata</i>	254
		<i>oculatrix</i>	241
		<i>odora</i>	368
		<i>Ogdoconta</i>	215
<i>olatra</i>	305	<i>Ogygia</i>	59
<i>obaurata</i>	313	<i>okakensis</i>	64
<i>obelica</i>	105	<i>oleagina</i>	276
<i>obeliscoidea</i>	105	<i>Oligia</i>	149
<i>obscula</i>	85, 87	<i>olivacea, Cerna</i>	48
<i>obscalis</i>	395	<i>olivacea, Mamestra</i>	125
<i>oblata</i>	73	<i>olivacea, Hypena</i>	394
<i>oblinita</i>	46	<i>olivalis</i>	89
<i>obliqua, Schinia</i>	276	<i>olivata</i>	221
<i>obliqua, Homoptera</i>	371	<i>olivia, Catocala</i>	331
<i>obliqua, Bellua</i>	181	<i>olivia, Feltia</i>	80
<i>obliqua, Homoptera</i>	369	<i>olivula</i>	310
<i>obliqua, Hydraria</i>	175	<i>olorina</i>	165
<i>obliquialis</i>	363	<i>omega</i>	250
<i>obliquata</i>	235	<i>Omia</i>	284
<i>obliquata, Bellua</i>	181	<i>omicron</i>	257
<i>obliquata, Heliophana</i>	290	<i>omicron</i>	250
<i>obliquifera</i>	193	<i>Omnitostola</i>	185
<i>obliquilinea</i>	260	<i>onagrus</i>	304
<i>oblita</i>	162	<i>Oncocnemis</i>	158
<i>obliterata</i>	48	<i>ononis</i>	287
<i>oblonga</i>	182	<i>onnata</i>	103
<i>oblongostigma</i>	89	<i>onychina</i>	32, 215
<i>oblitiosa</i>	135	<i>oo</i>	250
<i>obscura, Acronyeta</i>	40	<i>opaca</i>	79
<i>obscura, Mamestra</i>	124	<i>opacalis</i>	389
<i>obscura, Laphygma</i>	168	<i>opacifrons</i>	61
<i>obscura, Euclyptera</i>	192	<i>ophelia</i>	337
<i>obscura, Catocala</i>	353	<i>Ophideres</i>	354
<i>obscuripennis</i>	382	<i>Ophiura</i>	317, 10, 360
<i>obscurior, Mamestra</i>	125	<i>ophthalmica</i>	30
<i>obscurior, Cucullia</i>	237	<i>opina</i>	158
<i>observabilis</i>	55, 56	<i>opipara, Camerdes</i>	100, 106
<i>olaoleta</i>	382	<i>opipara, Tipocia</i>	315
<i>obsoleta, Fruva</i>	302	<i>Ornesia</i>	259
<i>obsoleta, Catocala</i>	339	<i>orba</i>	314
<i>obsoleta, Poaphila</i>	358	<i>orbica</i>	244
<i>obtusa, Taeniocanipa</i>	204	<i>orbicularis</i>	99
<i>obtusa, Metoponia</i>	316		

	Page.		Page.
<i>orbiculata</i>	131	<i>palpalis</i> , <i>Crambus</i>	395
<i>orbis</i>	53	<i>Palthis</i>	395
<i>oroiferalis</i>	396	<i>Pangrapta</i>	377
<i>ordinaria</i>	136	<i>Panopoda</i>	361
<i>ordinata</i>	96	<i>Panthea</i>	31
<i>oregona</i>	287	<i>Pannula</i>	320
<i>oregonensis</i>	228	<i>paradoxus</i>	369
<i>oregonica</i>	119	<i>parallela</i> , <i>Acronycta</i>	38
<i>orgyis</i>	307	<i>parallela</i> , <i>Trichorthosia</i>	210
<i>Oria</i>	274	<i>Parallela</i>	360
<i>Oribates</i>	315	<i>paranympha</i>	347
<i>orientalis</i>	184	<i>Parastichtis</i>	217
<i>orilliana</i>	63	<i>pardalis</i>	305
<i>orina</i>	212	<i>parentalis</i>	106
<i>oriunda</i>	228	<i>parilis</i>	256
<i>ornithogalli</i>	160	<i>parmeliana</i>	277
<i>orobia</i>	203	<i>parta</i>	340
<i>Orrhodia</i>	221, 223	<i>parta</i>	342, 345
<i>Orthodes</i>	198	<i>parthenias</i>	396
<i>Ortholitha</i>	357	<i>Parthenos</i>	330
<i>Orthosia</i>	217	<i>partita</i>	314
<i>orthosoides</i>	355	<i>parvimacla</i>	310
<i>ortonii</i>	69	<i>parvula</i> , <i>Fruva</i>	303
<i>osculata</i>	339	<i>parvula</i> , <i>Catocala</i>	331
<i>Otosema</i>	366	<i>pasiphæia</i>	256
<i>ou</i>	252	<i>passa</i>	122
<i>ovalis</i> , <i>Ingura</i>	246	<i>passer</i>	131
<i>ovalis</i> , <i>Phurys</i>	357	<i>pastillicans</i>	222
<i>ovata</i>	43	<i>pastoralis</i> , <i>Agrotis</i>	92
<i>oviduca</i>	203	<i>pastoralis</i> , <i>Kenia</i>	388
<i>oxalina</i>	211	<i>patalis</i>	234
<i>Oxycnemis</i>	267	<i>patefacta</i>	231
<i>oxygale</i>	185	<i>patibilis</i>	317
<i>oxygramma</i>	253	<i>patina</i>	146
<i>Oxylos</i>	272	<i>patricia</i>	186
<i>oxymorus</i>	113	<i>patruelis</i>	313
		<i>patula</i> , <i>Thalpocharis</i>	313
		<i>patula</i> , <i>Agrotis</i>	96
		<i>paulina</i>	352
<i>pacalis</i>	359	<i>paupercula</i>	38
<i>Pachnobia</i>	62	<i>pauxillus</i>	288
<i>Pachypolia</i>	164	<i>pavis</i>	142
<i>pacifica</i> , <i>Tæniocampa</i>	205	<i>pavitensis</i>	325
<i>pacifica</i> , <i>Acopa</i>	265	<i>pectinata</i> , <i>Tæniocampa</i>	204
<i>packardii</i>	281	<i>pectinata</i> , <i>Pachnobia</i>	63
<i>Pæctes</i>	241	<i>pectinata</i>	211
<i>paginata</i>	151	<i>pectinicornis</i>	82
<i>palata</i>	31	<i>pedalis</i> , <i>Carneades</i>	98
<i>paleacea</i>	214	<i>pedalis</i> , <i>Plusia</i>	252
<i>paleogama</i>	349	<i>pedipilalis</i>	361
<i>pallia</i>	202	<i>pellucidalis</i>	69
<i>Palindia</i>	361	<i>penita</i>	312
<i>Pallachira</i>	383	<i>penna</i>	371
<i>pallens</i> , <i>Ædophron</i>	268	<i>penalis</i>	128
<i>pallens</i> , <i>Leucania</i>	185	<i>penalis</i>	122
<i>palleocens</i>	327	<i>pepita</i>	261
<i>pallialis</i>	391	<i>peracuta</i>	232
<i>palliaticula</i>	50	<i>peramans</i>	348
<i>pallidicollis</i>	77	<i>perangulalis</i>	393
<i>pallidicoma</i>	39, 45	<i>perattenta</i>	60
<i>pallifera</i>	166	<i>perbellis</i>	217
<i>palligera</i> , <i>Heterogramma</i>	385	<i>perbrunnea</i>	202
<i>palligera</i> , <i>Deva</i>	247	<i>percara</i>	50
<i>pallipennis</i>	104	<i>perconfusa</i>	72
<i>pallula</i>	32	<i>perdita</i>	43
<i>palpalis</i> , <i>Condica</i>	152		

P.

	Page.		Page.
<i>perdita</i>	342	<i>Phiprosopna</i>	192
<i>perditalis</i>	376	<i>phlogophagus</i>	270
<i>peredia</i>	201	<i>Phlogophora</i>	170, 171
<i>perexcellens</i>	106	<i>Phoberia</i>	355
<i>perfecta</i>	326	<i>phoca</i>	129
<i>perflava</i>	318	<i>phoebe</i>	348
<i>perforata</i>	203	<i>Phosphila</i>	145
<i>perfusca</i>	91	<i>phragmatidicula</i>	187
<i>pergentilis</i>	164	<i>phrynia</i>	346
<i>periculosa</i>	171	<i>Phnrys</i>	316
<i>Peridroma</i>	68	<i>phyllophora</i>	72
<i>Perigea</i>	151	<i>Phyprosopus</i>	192
<i>Perigonica</i>	209	<i>phytolacca</i>	199
<i>Perigrapha</i>	209	<i>Phytometra</i>	311, 317
<i>Perigrapha</i>	207	<i>platrix</i>	359
<i>perita</i>	314	<i>picina</i>	161
<i>peritalis</i>	233	<i>picta</i>	120
<i>perlata</i>	321, 327	<i>pictipennis</i>	289
<i>perlata</i>	364	<i>pillipalis</i>	189
<i>perlentans</i>	106	<i>pinastri</i>	155
<i>perlubens</i>	234	<i>Pippona</i>	266
<i>permagna</i>	182	<i>piscipellis</i>	76
<i>perminuta</i>	287	<i>pitychromus</i>	263
<i>permunda</i>	91	<i>pitychrous</i>	94
<i>pernana</i>	271	<i>Pityolita</i>	381
<i>pernotata</i>	180	<i>placata</i>	359
<i>perophoroides</i>	215	<i>placida</i>	52
<i>perpallida, Acopa</i>	264	<i>Placodes</i>	245
<i>perpallida, Syneda</i>	324	<i>plagiata</i>	71
<i>perpensa</i>	138	<i>plagiata</i>	168
<i>perplexa, Scotogramma</i>	129	<i>plagigera</i>	89
<i>perplexa, Syneda</i>	324, 325	<i>Plagiomimons</i>	263
<i>perplexa, Perigea</i>	154	<i>plana</i>	307
<i>perplexa, Catocala</i>	340	<i>planalis</i>	206
<i>perplexa, Poaphila</i>	359	<i>planifrons</i>	65
<i>perpolita</i>	91	<i>planus</i>	109
<i>perpura, Agrotis</i>	101	<i>Platagrotis</i>	58
<i>perpura, Orthosia</i>	294	<i>Plathypena</i>	395
<i>perquirita</i>	58	<i>Platyserius</i>	31
<i>perscripta</i>	259	<i>Platysenta</i>	184
<i>persimilis</i>	288	<i>plecta</i>	74
<i>personata, Saligna</i>	32	<i>plentlinealis</i>	388
<i>personata, Agrotis</i>	94	<i>plenipennis</i>	373
<i>perapicua</i>	358	<i>Pleonectopoda</i>	106, 109
<i>peruassa</i>	43	<i>pleonectusa</i>	212
<i>pertracta</i>	18	<i>Pleonectoptera</i>	362
<i>perturbata</i>	97	<i>Pleroma</i>	235
<i>petrealis</i>	381	<i>pleuritica</i>	97
<i>petricula</i>	323	<i>plicatus</i>	180
<i>pettiti</i>	225	<i>plumbeola</i>	318
<i>petulana, Schinia</i>	281	<i>plumbifimbriata</i>	304
<i>petulana, Catocala</i>	340	<i>pluralis</i>	87
<i>petulus</i>	227	<i>Plusia</i>	247
<i>pexata</i>	280	<i>plusiformis</i>	208
<i>phæalis</i>	378	<i>Plusiodonta</i>	260
<i>Phæocyma</i>	368	<i>plutonia</i>	135
<i>phalænalis</i>	363	<i>pluviosa</i>	128
<i>Phalanopkana</i>	385	<i>Poaphila</i>	358
<i>Phalænostola</i>	377	<i>poetica</i>	265
<i>phalanga</i>	349	<i>Potentia</i>	263
<i>phalerosalis</i>	388	<i>poli</i>	137
<i>Phæocyma</i>	368	<i>Polia</i>	165
<i>Philochrysa</i>	180	<i>polygama</i>	332, 385
<i>Philometra</i>	383	<i>Polygrammate</i>	48
<i>Philomema</i>	271	<i>Polyphanis</i>	67

	Page.		Page.
<i>ponderosa</i>	350	<i>pudens</i>	28
<i>populi</i>	40	<i>pudorata</i>	27
<i>Pornosagrotia</i>	85	<i>puera</i>	216
<i>Porphyrinia</i>	272	<i>puerilis</i>	200
<i>Porrina</i>	274	<i>pulebella</i>	208
<i>portia</i>	341	<i>pulcherrima</i>	230
<i>postera</i>	237	<i>pulchripennis</i>	288
<i>postica, Trichoclea</i>	209	<i>pulla</i>	163
<i>posticata, Orthosia</i>	219	<i>pullata</i>	163
<i>præclara</i>	332	<i>pulverilinea</i>	375
<i>præcox</i>	70	<i>pulverosa</i>	375
<i>præfica</i>	170	<i>pulverosa</i>	379
<i>præfixa</i>	68	<i>pulverulenta, Mamestra</i>	121
<i>prægracilis</i>	185	<i>pulverulenta, Perigea</i>	154
<i>præpilata</i>	240	<i>pulverulenta, Polla</i>	106
<i>præses</i>	206	<i>punctifera</i>	153
<i>præstina</i>	57	<i>punctigera</i>	92
<i>precatiois</i>	251	<i>punctipennis</i>	378
<i>pressa</i>	59	<i>punctularis</i>	364
<i>pretiosa</i>	334	<i>pupillaris</i>	386
<i>pretiosa</i>	261	<i>pura</i>	341
<i>prima, Anorthodes</i>	198	<i>purgata</i>	318
<i>prima, Perigrapha</i>	209	<i>purpurascens</i>	250
<i>privatus</i>	109	<i>purpurea</i>	217
<i>procinctus</i>	170	<i>purpurifascia</i>	179
<i>proclivis</i>	79	<i>purpurifascia</i>	176
<i>Prodenia</i>	109	<i>purpurigera</i>	246
<i>prodeniformis</i>	117	<i>purpuripennis</i>	174
<i>prodeuns</i>	199	<i>purpuriseta</i>	114
<i>producta</i>	240	<i>pustulata</i>	297
<i>projecta</i>	393	<i>pustulata</i>	313
<i>promula</i>	129	<i>puta</i>	218
<i>promptella</i>	192	<i>puta</i>	223
<i>propera</i>	311	<i>putrescens</i>	368
<i>propinqualis</i>	384	<i>putnami</i>	248
<i>propinquilinea</i>	32	<i>pygmaea, Ingura</i>	241
<i>proprius</i>	286	<i>pygmaea, Deretia</i>	396
<i>propulsa</i>	117	<i>pyralis</i>	362
<i>prorupta</i>	287	<i>pyramidoides</i>	197
<i>protea</i>	249	<i>pyramusalis</i>	385
<i>Prothymia</i>	307	<i>Pyrophila</i>	196
<i>protumnusalis</i>	383	<i>pyrophiloides</i>	78
<i>proxima</i>	155	<i>Pyrrhia</i>	216
<i>pruni</i>	44		
<i>Psaphidia</i>	111		
<i>Pseudacantha</i>	273		
<i>Pseudaglossa</i>	377		
<i>Pseudanarta</i>	148		
<i>Pseudanthracia</i>	286		
<i>Pseudanthracia</i>	373		
<i>pseudargyria</i>	189		
<i>pseudogamma</i>	251		
<i>Pseudoglea</i>	210		
<i>Pseudolimnecodes</i>	356		
<i>Pseudophia</i>	191		
<i>Pseudorgyia</i>	386		
<i>Pseudorthosia</i>	211		
<i>Pseudotamila</i>	287		
<i>Pseudorthodes</i>	199		
<i>Pseudothyatira</i>	28		
<i>psi</i>	36		
<i>Pterætholix</i>	244		
<i>Pteroscia</i>	191		
<i>Ptichodes</i>	357		
<i>ptilodonta</i>	164		
<i>ptycophora</i>	264		

Q.

<i>quadrata, Acronycta</i>	38
<i>quadrata, Mamestra</i>	124
<i>quadrannulata</i>	127
<i>quadridentata</i>	89
<i>quadrifera</i>	315
<i>quadrifilaris</i>	358
<i>quadri-lineata</i>	126
<i>quadrilunata</i>	298
<i>quadriplaga</i>	256
<i>quadriplagiata</i>	369
<i>quærita</i>	140
<i>quærita</i>	176
<i>quarta</i>	57
<i>querquera</i>	220
<i>questionis</i>	250
<i>quieta</i>	295
<i>quinquelinea</i>	99

R.

<i>radcliffei</i>	39
<i>radiata</i>	81

	Page.		Page.
radix.....	117	riparia.....	161
ralla.....	217	<i>Ripogonius</i>	239
ramosula.....	167	rivula.....	384
ranunculi.....	260	<i>rivulosa</i>	282
Raphia.....	32	robinsonii.....	351
<i>ravilis</i>	151	rogationis.....	250
rava.....	73	rogenhoferi.....	114
rosa.....	101	rolandi.....	112
<i>rectangula</i>	254	rolandiana.....	306
rectifascia, <i>Alethmia</i>	214	rosea.....	309
rectifascia, <i>Cleoceris</i>	215	<i>rosalba</i>	307
rectilinea.....	125	rosalinda.....	341
<i>rectilinea</i>	155	rosaria.....	73
regula.....	88	rosea, <i>Thyreion</i>	268
<i>recusans</i>	377	rosea, <i>Mamestra</i>	120
redimicula.....	107	<i>rosea</i> , <i>Cerura</i>	272
regia.....	279	roselcosta.....	362
<i>regnatrix</i>	180	roseitincta.....	278
relecina.....	140	rotundalis.....	378
relicta.....	346	rubefacta.....	120
Remigia.....	363	rubefactalis.....	97
remigipila.....	320	rubi.....	78
remissa.....	132	rubi.....	369
<i>remissa</i>	152	<i>rubicunda</i>	308
remota.....	93	rubifera.....	73
rena.....	102	<i>rubiginosa</i>	278
Renia.....	386	rubrescens.....	206
reniformis.....	173	rubrica.....	234
renigera.....	124	rubricoma.....	42
repanda.....	361	<i>rubricosta</i>	361
<i>repanda</i>	363	rubripennis.....	186
repentina.....	123	rubrosuffusa.....	375
repentis.....	374	rudens.....	69
<i>repentis</i>	96	rufa.....	384
<i>repressus</i>	197	rufago.....	223
residua.....	353	rufimargo.....	361
resoluta.....	397	<i>rufimedia</i>	284
restrictalis.....	387	rufinalis.....	395
resumens.....	111	rufipictus.....	51
retardata.....	45	<i>rufipennis</i>	85
retecta.....	351	rufostriga.....	186
<i>reticens</i>	96	rufula.....	203
retia.....	311	<i>rufula</i> , <i>Agrotis</i>	101
retroversa.....	157	<i>rufula</i> , <i>Mamestra</i>	121
revicta.....	206	rufifrons.....	262
revoluta.....	360	rugosa.....	123
<i>rhezia</i>	260	rurigena.....	386
Rhisagrotis.....	79	russea.....	252
rhodarialis.....	307	ruscula.....	386
Rhododipea.....	273	rutila.....	177
<i>Rhodophora</i>	272		
Rhodosea.....	272		
Rhynchagrotis.....	51		
<i>Rhytia</i>	354		
richardsoni.....	293		
richi.....	263		
Richia.....	108		
ridingsiana.....	90		
ridingail.....	306		
rigida, <i>Agrotiphila</i>	110		
rigida, <i>Hydrocia</i>	176		
<i>rigida</i>	295		
rileyana, <i>Porosagrotis</i>	86		
rileyana, <i>Morriacnia</i>	231		
rimosa.....	189		

S.

sabulosa.....	321
sackeni.....	257
saga.....	316
sagittarius.....	190
Salla.....	384
salicorum.....	63
salicis, <i>Acronycta</i>	47
salicis, <i>Homoptera</i>	370
salicis, <i>Annaphila</i>	297
<i>Saligena</i>	32
<i>saligna</i>	384
salusalis.....	387
sambuci.....	212

	Page.		Page.
<i>sancta, Acronycta</i>	40	<i>semipurpurea</i>	307
<i>sancta, Catocala</i>	334	<i>semirelicta</i>	342
<i>sandix</i>	180	<i>semisigna</i>	147
<i>sanguinea</i>	279	<i>semiusta</i>	228
<i>sanguinea</i>	280	<i>senecens</i>	147
<i>saporis</i>	273	<i>sensilis</i>	50
<i>sappho</i>	352	<i>Senta</i>	183
<i>sara</i>	346	<i>separans</i>	183
<i>satiens</i>	85	<i>separata</i>	277
<i>satis</i>	102	<i>seposita</i>	323
<i>saturata</i>	278	<i>septempunctata</i>	206
<i>satyrigena</i>	190	<i>septentrionalis, Schinia</i>	284
<i>saucia</i>	60	<i>septentrionalis, Melicleptia</i>	289
<i>saundersiana</i>	160	<i>septentrionalis, Mamestra</i>	96
<i>saundersii</i>	369	<i>septentrionalis, Agrotis</i>	86
<i>saunalitæ</i>	179	<i>septentrionalis Anarta</i>	293
<i>saxea</i>	323	<i>Septis</i>	231
<i>saxigena</i>	50	<i>sera</i>	174
<i>scabra</i>	395	<i>serena</i>	348
<i>scabrinscula</i>	155	<i>sericea</i>	222
<i>scandens</i>	93	<i>serrata</i>	179
<i>scapularis</i>	263	<i>serraticornis, Cucullia</i>	238
<i>Schinia</i>	274	<i>serraticornis, Philometra</i>	384
<i>schœnherri</i>	283	<i>serricornis</i>	94
<i>scintillans</i>	349	<i>sesquistriaria</i>	360
<i>scirpicola</i>	187	<i>Setagrotis</i>	65
<i>scissa</i>	285	<i>setatilis</i>	105
<i>scissa</i>	361	<i>sextigata</i>	47
<i>scobialis</i>	378	<i>sexplagata</i>	275
<i>Scolecocampa</i>	191	<i>sexpunctata</i>	376
<i>Scoliopteryx</i>	224	<i>sexseriata</i>	265
<i>Scoparia</i>	395	<i>sexsignata</i>	323
<i>Scopelosoma</i>	224	<i>Siavana</i>	361
<i>Sootogramma</i>	129	<i>Sideridis</i>	174
<i>Scotophila</i>	197	<i>sidus</i>	226
<i>scripta</i>	27	<i>sierræ</i>	75
<i>scriptipennis</i>	379	<i>sigmoides</i>	60
<i>seropulana</i>	64	<i>signata, Tricholita</i>	172
<i>serupulosa</i>	321	<i>signata, Glæa</i>	221
<i>sculptilis</i>	95	<i>signifera</i>	168
<i>sculptus</i>	109	<i>signosa</i>	227
<i>scutellaris</i>	390	<i>signosa</i>	227
<i>scutuosus</i>	271	<i>siago</i>	228
<i>secta</i>	310	<i>silens</i>	107
<i>secedens</i>	294	<i>similaris</i>	237
<i>sectilis</i>	232	<i>similis</i>	331
<i>sedata</i>	300	<i>similis, Grammodes</i>	319
<i>Sedenia</i>	265	<i>similis, Catocala</i>	333
<i>Segetia</i>	153	<i>simplaria</i>	70
<i>selecta</i>	265	<i>simplex, Acronycta</i>	47
<i>selecta</i>	345	<i>simplex, Oncocnemis</i>	159
<i>Selenis</i>	373	<i>simplex, Xylomiges</i>	233
<i>semiaperta</i>	172	<i>simplex, Plusia</i>	256
<i>semicana</i>	144	<i>simplex, Schinia</i>	276
<i>semichalcra</i>	309	<i>simplicia</i>	70
<i>semicircularis</i>	29	<i>simplicius</i>	70
<i>semiclarata</i>	83	<i>simulatilis</i>	353
<i>semicrocea</i>	306	<i>sincera</i>	59
<i>semiflava</i>	303	<i>singula</i>	148
<i>semifurca</i>	153	<i>sinnalis</i>	328
<i>semilineata</i>	376	<i>sinuosa</i>	338
<i>semilunata</i>	141	<i>siren</i>	265
<i>seminivealis</i>	300	<i>Sisyrrhynpa</i>	386
<i>semipaca</i>	300	<i>amaragdina</i>	145
<i>Semiphora</i>	61	<i>amithii</i>	319

	Page.		Page.
<i>snoviana</i>	350	<i>Stretchia</i>	207
<i>snowi</i> , <i>Plusia</i>	257	<i>stretchii</i> , <i>Scotogramma</i>	130
<i>snowi</i> , <i>Thyreion</i>	266	<i>stretchii</i> , <i>Catocala</i>	341
<i>sobria</i> , <i>Graphiphora</i>	173	<i>stretchii</i>	324
<i>sobria</i> , <i>Oreania</i>	250	<i>striatella</i>	248
<i>sobria</i> , <i>Microphyes</i>	317	<i>stricta</i>	125
<i>sobrialis</i>	337	<i>stricta</i>	144
<i>socia</i>	323	<i>strigata</i>	156
<i>socia</i>	139	<i>strigicollis</i>	126
<i>socors</i>	318	<i>strigifera</i>	169
<i>solidaginis</i>	239	<i>strigilis</i>	107
<i>solidaginis</i>	235	<i>stygalis</i>	328
<i>solitaria</i>	104	<i>stylobata</i>	372
<i>sommeri</i>	187	<i>Stylopoda</i>	283
<i>somnus</i>	344	<i>styracia</i>	206
<i>sordida</i> , <i>Schinia</i>	279	<i>suavis</i>	271
<i>sordida</i> , <i>Spragueia</i>	305	<i>subopicalis</i>	234
<i>sordida</i> , <i>Catocala</i>	331	<i>subaquila</i>	196
<i>sordidula</i>	292	<i>subcarnea</i>	182
<i>soror</i>	78	<i>subcedens</i>	146
<i>spadaria</i>	192	<i>subcitrinalis</i>	304
<i>spadix</i>	207, 320	<i>subdita</i>	139
<i>Spargaloma</i>	376	<i>subdolens</i>	172
<i>specialis</i>	88	<i>subflava</i>	182
<i>speciosa</i> , <i>Platagrotis</i>	58	<i>subflavidalis</i>	263
<i>speciosa</i> , <i>Polla</i>	166	<i>subflavidens</i>	267
<i>speciosissima</i>	177	<i>subflexa</i>	269
<i>spectanda</i>	103	<i>subfuscula</i>	204
<i>spectanda</i>	269	<i>subgothica</i>	81
<i>spectans</i>	48	<i>subgothica</i>	81
<i>specularia</i>	367	<i>subjuncta</i>	118
<i>sperata</i>	45	<i>sublatis</i>	100
<i>speyeri</i>	238	<i>submarina</i>	129
<i>Sphida</i>	181	<i>subnata</i>	350
<i>spiculosa</i>	125	<i>subochrea</i>	42
<i>Spiloloma</i>	354	<i>subolivacea</i>	307
<i>spinea</i>	35	<i>subpartita</i>	314
<i>spinigera</i>	39	<i>subporphyrea</i>	76
<i>spinigera</i>	36, 39	<i>subpunctata</i>	189
<i>spinosa</i>	281	<i>Subrita</i>	240
<i>spinea</i>	96	<i>subrufalis</i>	395
<i>spoliata</i>	231	<i>subterminata</i>	206
<i>sponsa</i>	90	<i>subusta</i>	213
<i>spraguei</i>	280	<i>subvexa</i>	212
<i>Spragueia</i>	304	<i>subviridis</i>	353
<i>spumosum</i>	262	<i>Subariophora</i>	192
<i>spurcata</i>	218	<i>sueta</i>	289
<i>sputator</i>	135	<i>suffusa</i>	203
<i>sputatrix</i>	135	<i>suffusa</i>	66
<i>squamularis</i>	373	<i>suffusa</i> , <i>Hadena</i>	105
<i>standingeri</i>	110	<i>suffusa</i> , <i>Xylophasia</i>	133
<i>stellaris</i>	57	<i>sumula</i>	275
<i>stellata</i>	271	<i>sulphurea</i>	262
<i>Stewarti</i>	167	<i>superans</i>	43
<i>Stibadium</i>	262	<i>superbe</i>	296
<i>Stictoptera</i>	329	<i>sutena</i>	255
<i>stigma</i>	113	<i>surrectalis</i>	378
<i>stigmata</i>	164	<i>sutrina</i>	127
<i>stigmosa</i>	84	<i>sutrix</i>	299
<i>stilla</i>	216	<i>Sylectra</i>	376
<i>stipata</i>	131	<i>sylvarum</i>	358
<i>Stiria</i>	262	<i>sylvia</i>	344
<i>stramentosa</i>	175	<i>Sympistis</i>	296
<i>strens</i>	309	<i>Syneda</i>	322
<i>Stronoloma</i>	354	<i>Synedoida</i>	320

	Page.		Page.
<i>Syngrapha</i>	258	thoracica, Antapлага	206
<i>synchites</i>	310	thoreani	282
<i>Syrnia</i>	367	<i>thrazakis</i>	398
T.			
<i>tabulata</i>	234	Thyatira	27
<i>tactus</i>	374	THYATRIDÆ	27
<i>tadada</i>	210	thyatiroides	249
<i>Teniocampa</i>	201	Thyreion	268
<i>talidiformis</i>	194	<i>Thyridospila</i>	377
<i>Tamila</i>	274	Thysania	367
<i>tantillus</i>	375	<i>Tauspa</i>	280
<i>Tapinostola</i>	184	<i>tigris</i>	245
<i>Tarache</i>	298	<i>timais</i>	180
<i>tarda</i>	195	<i>timandra</i>	332
<i>tearili</i>	29	<i>togata, Apamea</i>	199
<i>tecta</i>	199, 244	<i>togata, Xanthia</i>	223
<i>tejonica</i>	324	<i>tonaa</i>	143
<i>teleboa</i>	99	<i>toreuta</i>	392
<i>Telesilla</i>	245	<i>tortilis</i>	146
<i>telifera</i>	66	<i>torticina</i>	306
<i>teligera</i>	128	<i>Torticodes</i>	395
<i>telum</i>	86	<i>tota</i>	39
<i>tenebrifera</i>	62	<i>Toxocampa</i>	355
<i>tenella</i>	328	<i>trabalis</i>	59
<i>tenuescens, Peridroma</i>	70	<i>Trachea</i>	148
<i>tenuescens, Schinia</i>	275	<i>tracta</i>	150
<i>tenuicola, Agrotis</i>	67	<i>tragopoginis</i>	197
<i>tenuicola, Acontia</i>	299	<i>Trama</i>	364
<i>tenuifascia</i>	159	<i>transfrous</i>	141
<i>tenuis</i>	365	<i>transmutata</i>	305
<i>tepidi</i>	229	<i>transparens</i>	208
<i>tepperi, Noctua</i>	77	<i>tranquilla</i>	212
<i>tepperi, Plagiomimicus</i>	263	<i>transversa</i>	90
<i>Tetanolita</i>	389	<i>transversata</i>	29
<i>tetra</i>	101	<i>treatii</i>	71
<i>tetrica, Carneades</i>	94	<i>tremula</i>	222
<i>tetrica, Cirrhobolina</i>	326	<i>Triana</i>	37
<i>teratophora</i>	49	<i>triangulifer</i>	261
<i>Teratocera</i>	376	<i>triangulum</i>	71
<i>termina</i>	368	<i>Trichoclea</i>	209
<i>terminalis</i>	159	<i>Trichocosmia</i>	210
<i>terminata</i>	204	<i>Tricholita</i>	172
<i>terminellus</i>	194	<i>Trichopolia</i>	164
<i>terminimaculata</i>	301	<i>Trichorthosia</i>	210
<i>terrealis</i>	79	<i>Trichosellus</i>	274, 280
<i>territans</i>	261	<i>Trichotarache</i>	298
<i>tertia</i>	279	<i>Tricopsis</i>	274
<i>tesellata</i>	103	<i>tricosa</i>	81
<i>teselloides</i>	107	<i>trifariana</i>	305
<i>texana, Porosagrotis</i>	86	<i>trifascia</i>	202
<i>texana, Leucania</i>	187	<i>trifasciata, Schinia</i>	275
<i>texana, Anomis</i>	242	<i>trifasciata, Carneades</i>	95
<i>texana, Remigia</i>	364	<i>trifolii</i>	119
<i>thalassina</i>	118	<i>trigona</i>	53
<i>Thalpochara</i>	313	<i>Trigonophora</i>	171
<i>thaxterianus</i>	111	<i>Trileuca</i>	218
<i>thaxteri</i>	230	<i>trilineata</i>	213
<i>thecata</i>	200	<i>Trionemis</i>	273
<i>theodori</i>	165	<i>tripars</i>	86
<i>theralis</i>	380	<i>tripla</i>	384
<i>Thermesia</i>	365	<i>triplagiatus</i>	263
<i>Thermma</i>	192	<i>Tripudia</i>	314
<i>thoracica, Acronycta</i>	37	<i>triquetra</i>	197
<i>thoracica, Calocampa</i>	236	<i>triquetrana</i>	193
		<i>trisecta</i>	194, 195
		<i>trislignata</i>	47

	Page.
<i>tristricula</i>	100
<i>tristigmata</i>	225
<i>tristis</i>	347
<i>tristrigella</i>	193
<i>tristici</i>	102
<i>tritona</i>	37
<i>trituberalis</i>	392
<i>trencaetella</i>	303
<i>tuberculum</i>	283
<i>tumida</i>	286
<i>Tumax</i>	192
<i>turbata</i>	360
<i>turbulenta</i>	145
<i>turris</i>	104
<i>tusa</i>	143
<i>typha</i>	183

U.

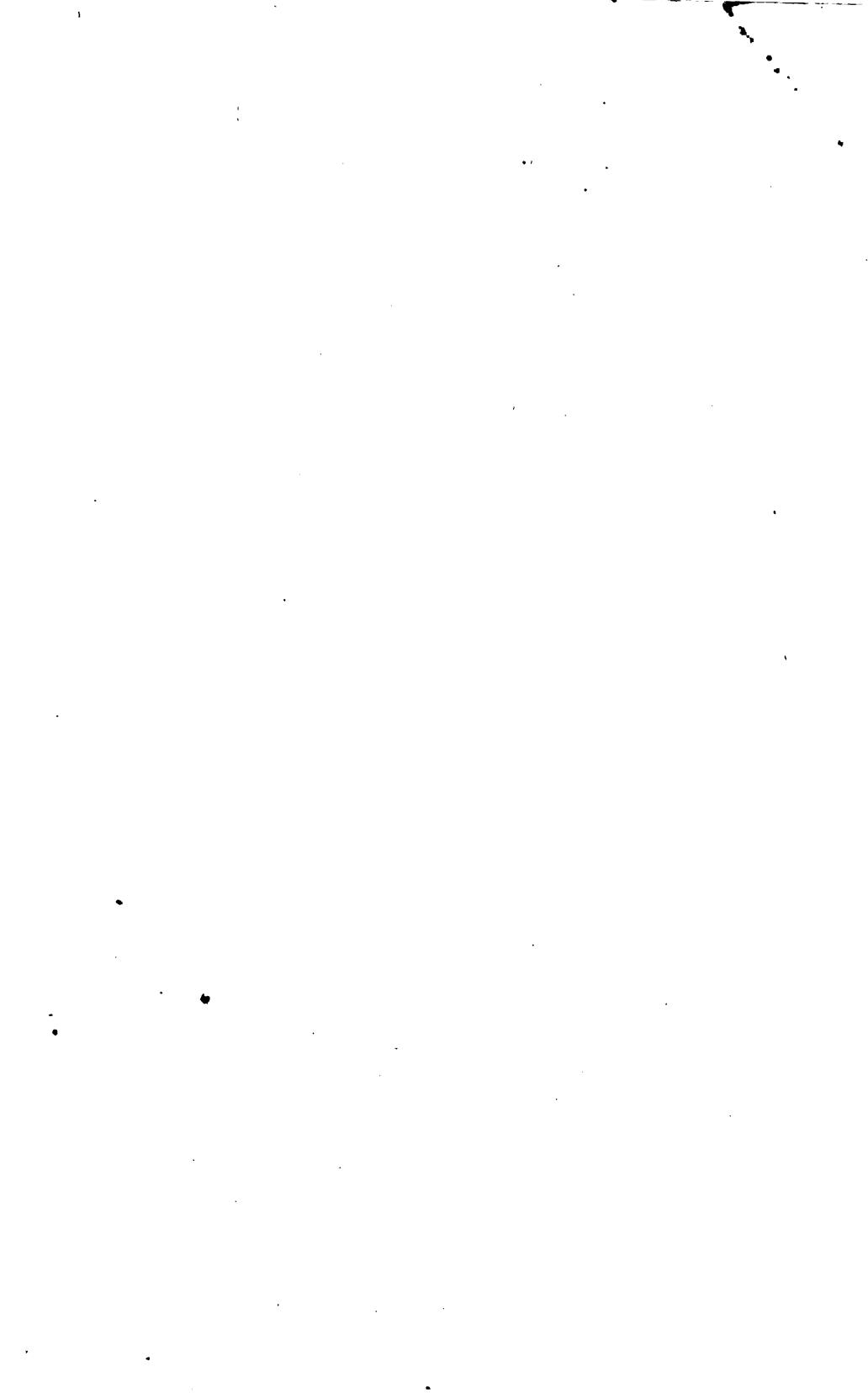
u-aureum	254
u-album	174
u-brevis	249
Ufeus	190
ulalume	352
ulmi	36
Ulolonche	130
ultima	285
ultronia	338
umbra	216
umbralis	392
umbrata	73
umbratica	238
umbrifascia	376
umbrina	368
umbripennis	373
umbrosa	130
umbrosa	339
umbrosus	270
undularis	372
undulifera	312
unica	259
unicolor	190
unicolor	75
uniformis, Tæniocampa	202
uniformis, Homoptera	371
unjuga	340
unilineata	371
unimacula	276
unimacula	74
unimoda	229
unipuncta	189
unesignata	151
unocula	298
unxis	316
urbicola	366
urentia	246
u-scripta	119
utahensis	203
uxor	339

V.

vacciniae	289
vaccinii	254
v-album	174
valens	321
Valeria	156

	Page.
valeria	343
vancouverensis	83
vanelle	287
vapularis	83
varia	149
variabilis, Pseudorthosia	211
variabilis, Stretchia	208
variana	184
variata	53
variolata	122
variz	53
vau-media	126
v-brunneum	171
vecora, Perigea	152
vecora, Orthodes	199
vegeta	207
vegeta	318, 320
velaris	274
velata	174
velata, Celana	199
velata, Graphiphora	52
velleripennis	92
vellifera	393
venata	206
venerabilis	83
ventilator	239
venusta	248
venusta	287
venustula	222
verbascoides	139
verecunda	342
vernalis	112
vernilis	65
verrilliana	337
verrillii	41
verruca	250
versabilis	328
versicolor	150
versipellis	107
versuta	386
versutus	314
verticalis	102
vesca	314
vetusta, Agrotis	108
vetusta, Carneades	101
vetusta, Porosagrotis	85
vetusta	235
viatica	221
vicina	128
victoria	355
videns	184
vidua	351
viglians	147
villosa	288
vineta	150
vinculum	357
vindemialis	205
vindemialis	120
vinnula	38
vinulenta	226
violacea	141
violana	172
violaris	66
violenta	337
viridis	132

	Page.		Page.
<i>virens</i>	324	<i>westcottii</i>	336
<i>vireascens</i>	268	<i>westermanni</i>	105
<i>virgata</i>	343	<i>whitneyi</i>	335
<i>virginialis</i>	300	<i>wilsonii</i>	86
<i>virgula</i>	200	<i>w-latinum</i>	117
<i>viridans</i>	360	<i>wockel</i>	64
<i>viridata</i>	49	<i>woodii</i>	370
<i>viridata</i>	310	<i>worthingtoni</i>	86
<i>viridescens</i>	111		
<i>viridifera</i>	264	X.	
<i>viridipallens</i>	229	<i>Xanthia</i>	223
<i>viridisignata</i>	255	<i>Xanthodes</i>	303
<i>viridula</i>	212	<i>Xanthopastis</i>	180
<i>viridus</i>	360	<i>Xanthoptera</i>	303
<i>vitia</i>	116	<i>Xanthothrix</i>	290
<i>vitrea</i>	396	<i>Xestia</i>	230
<i>vittifrons</i>	54	<i>xytina</i>	243
<i>vittula</i>	117	<i>xylina</i>	226
<i>vocalis</i>	77	<i>xyliniformis</i>	45
<i>volubilis</i>	84	<i>xylinoides</i>	45
<i>volucris</i>	374	<i>Xylomiges</i>	233
<i>volumnia</i>	343		
<i>volupia</i>	273	Y.	
<i>vomerina</i>	232	<i>yosemitae</i>	163
<i>vorax</i>	161	<i>Ypsia</i>	372
<i>votiva</i>	337	<i>ypaillon</i>	66
<i>vulgaris</i>	139, 140	<i>Yrias</i>	374
<i>vulberae</i>	157		
<i>vinifica</i>	181	Z.	
<i>vulpina</i> , <i>Acronycta</i>	40	<i>Zale</i>	367
<i>vulpina</i> , <i>Cirrhopolina</i>	325	<i>Zanclognatha</i>	381
<i>vultuosa</i>	134	<i>zee</i>	179
<i>vulvivaga</i>	144	<i>zelleri</i>	193
		<i>zellica</i>	352
W.		<i>zenobia</i>	367
<i>w-album</i>	174	<i>zetterstedtii</i>	295
<i>walkeri</i>	225	<i>zillah</i>	342
<i>walehii</i>	345	<i>zoe</i>	339
<i>walsinghami</i>	278	<i>zonata</i>	374
<i>washingtonia</i>	230	<i>Zoateropoda</i>	190
<i>washingtoniensis</i>	57	<i>Zothea</i>	212



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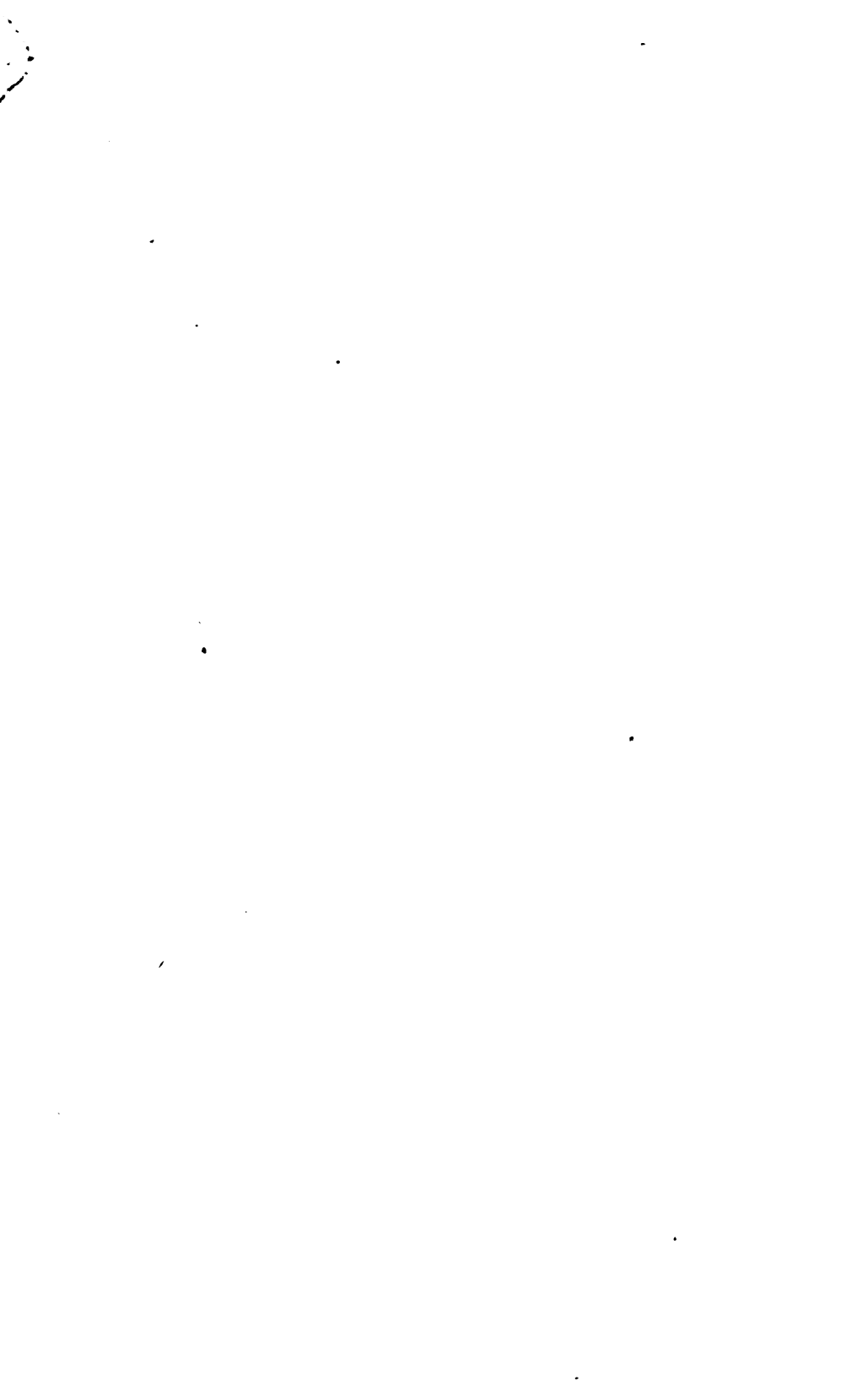
MONOGRAPH OF THE NORTH AMERICAN PROCTOTRYPIDÆ.

BY

WILLIAM H. ASHMEAD.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.



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ADVERTISEMENT.

This work (Bulletin No. 45) is one of a series of papers intended to illustrate the collections belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

The publications of the National Museum consist of two series—the Bulletin, of which this is No. 45, in continuous series, and the Proceedings, of which the sixteenth volume is now in press. A small edition of each paper in the Proceedings is distributed in pamphlet form to specialists in advance of the publication of the bound volume.

The Bulletin of the National Museum, the publication of which was commenced in 1875, consists of elaborate papers based upon the collections of the Museum, reports of expeditions, etc., while the Proceedings facilitate the prompt publication of freshly-acquired facts relating to biology, anthropology, and geology, descriptions of restricted groups of animals and plants, the discussion of particular questions relative to the synonymy of species, and the diaries of minor expeditions.

Other papers, of more general popular interest, are printed in the Appendix to the Annual Report.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletin of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean (chairman), A. Howard Clark, R. E. Earll, Otis T. Mason, Leonhard Stejneger, Frederick W. True, and Lester F. Ward.

S. P. LANGLEY,

Secretary of the Smithsonian Institution.

WASHINGTON, D. C., *July 5th, 1893.*

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MONOGRAPH

OF THE

NORTH AMERICAN PROCTOTRYPIDÆ.

BY

Harris
WILLIAM H. ASHMEAD.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1893.

P R E F A C E .

In the present work I have attempted to give a systematic description of the species of the Hymenopterous family *Proctotrypidæ*, found in North America, north of Mexico, at the same time systematizing and describing the genera of the world, as an aid to future students.

It represents several years study of the family, and although sensible of its incompleteness and many imperfections I shall be fully repaid for the labor involved if I have paved the way for a more thorough study of the family or stimulated others to collect these curious insects and study their remarkable habits.

In the preparation of this work my thanks are especially due to the following friends:

To Mr. W. Hague Harrington, of Ottawa, Canada, I am indebted for valuable contributions to my cabinet during many years and for types of some of the species described by the Abbé Provancher; to my friends and colleagues, E. A. Schwarz, Theo. Pergande, and Otto Heidemann, who have contributed by donating, from time to time, specimens taken during our entomological excursions in and around Washington and elsewhere; to Prof. E. A. Popenoe, for a few species collected in Kansas; to Dr. C. V. Riley, for the free use of his valuable notes on the rearings and habits of the species, and for other courtesies shown me during the progress of the work; to Mr. L. O. Howard, my friend and colaborer in the Microhymenoptera for like courtesies; to Dr. Gustav Mayr, of Vienna, Austria, for some typical European genera, and to Dr. C. W. Stiles, for making a microscopical section of the ovipositor.

Finally, to Prof. Dr. K. Möbius, director of the Royal Berlin Museum, and to Dr. F. Karsch, custodian of said museum, my warmest thanks are due for allowing me to study and describe the North American species contained therein.

I have also had the privilege of studying and describing the many new and interesting forms in the National collection and in the collection of the American Entomological Society, kindly sent by Mr. E. T. Cresson to the Museum for study and exchange, and which contains the types of Cresson, Patton, and Haldeman.

Dr. Riley has also permitted me to include from his manuscript, a few descriptions of species in which he has been particularly interested.

W. H. A.

WASHINGTON, D. C., *March 4, 1893.*

CONTENTS.

	Page.
Preface	5
Introduction	9
External structural characters: The head; the thorax; the abdomen, ovipositor, etc.	10
Habits of the perfect insects.	16
Dimorphism and parthenogenesis.	17
The transformations or life history.	18
The egg and embryological development; the larvæ, their habits and pupation.	
Distribution	21
Classification	22
Table of the subfamilies	26
Subfamily I.—Bethylinæ	27
II.—Emboleminæ	77
III.—Dryininæ	80
IV.—Ceraphroninæ	102
V.—Scelioninæ	136
VI.—Platygasterinæ	247
VII.—Helorinæ	330
VIII.—Proctotrypinæ	331
IX.—Belytinæ	345
X.—Diapriinæ	384
Tabular view of the bred North American Proctotrypidæ	449
Literature and abbreviations.	453
Explanation to plates.	459
Index	465

INTRODUCTION.

What a wide field, therefore, remains to be investigated before we shall become acquainted with the 600,000 or even 400,000 species supposed by Messrs Kirby and Spence to exist; and how absurd does it seem to consider our systems or rather system as firmly established whilst so little is comparatively known.—WESTWOOD, in 1833.

Although the classification of insects is in a more satisfactory condition than when Prof. Westwood wrote these memorable words, more than half a century ago, a fact due in great part to this Nestor of entomology and his contemporaries, our system of classification can not yet be considered firmly established. Instead of 600,000 species to deal with, later estimates place them at millions. Messrs. Sharp and Walsingham in 1889 placed them at two millions; while the latest authority, that of Dr. C. V. Riley, 1892, indicates that there are perhaps 10,000,000 species existing on the globe.

In these pages it is my province to treat of only a small proportion of this intricate and perplexing aggregate of forms, as found in America, north of Mexico, viz: those of the single family Proctotrypidæ.

The Proctotrypidæ, by some authorities, are considered to be closely allied to the Chalcididæ and, in a systematic arrangement of the hymenopterous families, usually follow them in our manuals and catalogues.

I consider, however, that they have but little affinity with the Chalcididæ and that this arrangement is unnatural. They are in every respect more closely allied to the *Hymenoptera aculeata*, the Chrysididæ, Scoliidæ, Mutillidæ, and Thynnidæ; while in the Terebrantia, I believe, they approach closest to the parasitic Cynipidæ (*Allotria*, *Eucoila*, and *Figites*).

In a natural arrangement, therefore, they should be placed at the head of the Terebrantia; for after the removal of the group Mymarinae, [which I hold with Haliday forms a separate and distinct family allied to the Chalcididæ,] there is no relationship with the Chalcididæ.

With the Mymarinae removed, there will be no difficulty in distinguishing, at a glance, a Proctotrypid from a Chalcid. In all true Proctotrypids the pronotum extends back to the tegulæ and the ovipositor issues from the tip of the abdomen, the sheaths, except in a few abnormal cases, being conjoined and forming a more or less cylindrical tube or scabbard for the reception of the two spiculæ and the ovipositor proper; whereas, in all Chalcids the pronotum never extends back to

the tegulæ and the ovipositor issues far anterior to the tip of the abdomen, reposing in a ventral slit or groove, while the sheaths are always distinctly separated, never conjoined.

Other families in the terebrant Hymenoptera agree with the Proctotrypidæ in having the pronotum extending back to the tegulæ; but in these, except in the family Pelecinidæ, which I now believe, with Haliday, Cresson, and Cameron, is closely related to this family, the ovipositor does not issue from the tip of the abdomen; besides, other good structural characters exist that readily separate them.

From the families of the Aculeata they are separated by having, except in a few cases, 2-jointed trochanters and in venational and antennal characters. All aculeate Hymenoptera, except in a few cases, have the antennæ 12-jointed in the female and 13-jointed in the male, while in the Proctotrypidæ such is not the case: either both sexes have the same number of joints or a less or greater number in the opposite sex.

With these few preliminary remarks, and before entering into the systematic description of the divisions, genera, and species, I have thought it advisable to go more fully into a description of the external structure, biology, and classification.

EXTERNAL STRUCTURAL CHARACTERS.¹

THE HEAD.

The head, in shape, is variable in the different groups; it may be oblong, transverse, quadrate, or globular, and is rarely cornuted (*Galesus*). The vertex is usually convex or subconvex and in only two genera, *Dryinus* and *Gonatopus*, is it concave. The occiput is more or less concave or excavated, with the superior margin rounded or sharp, and frequently margined, the margin often extending along the cheeks (*Scelio*, etc.). The ocelli when present are three in number and variously arranged, their position affording excellent secondary generic characters; they are absent only in a few apterous forms in the different groups. The eyes are usually of moderate size, rounded, ovate, or oval, and most frequently convex; in the wingless forms they are occasionally very small but rarely entirely wanting (*Isobrachium* ♀). The clypeus is small or inconspicuous, and has afforded but slight assistance in systematic work, although possibly more use could be made of it. In the Bethylinæ it is strongly carinated medially. The antennæ vary in length, shape, and in the number of joints from 7 to 15; also in the position of insertion. They may be elbowed or straight, seldom exhibit a ring joint, and are of primary importance in classification. It is usually only in the males that the antennæ are longer than the body, and in this sex they are generally filiform or setaceous, more rarely clavate or subclavate, rarely branched or ramose, and

¹ Details figured on plate 1.

dentate or pedicellate and verticillate. In some groups the number of joints is alike in both sexes, but in others they are more numerous in the males, while in at least one group, the Belytinæ, the females have the greater number.

The mandibles are in the majority of the groups bidentate or bifid, but in the Bethylinæ and Dryininæ they vary from 2- to 6-dentate: *Apenesia* has but 2; *Epyris* and *Mesitius* 5 or 6; *Scleroderma* 3 or 4, etc. Most of the genera in the Dryininæ have 3 or 4; the Scelioninæ 2 or 3; while in only one group, the Proctotrypinæ, are they edentate. The maxillæ, Pl. I, Fig. 2, terminate in one or two large, thin, membranous lobes, the galea and lacinia, while the mentum is small, horny, or coriaceous. The maxillary palpi vary in the number of joints from 2 to 6 and are usually conspicuous from beneath. The labial palpi, Pl. I, Fig. 3, on the contrary, are short and inconspicuous, usually 2- or 3-jointed, the terminal joint being the longest; while in one group, the Platygasterinæ, they are 1-jointed.

THE THORAX.

The thorax is, as a rule, rarely very much narrower than the head, variable in breadth and length in the different groups, and is of the greatest importance in classification. The three principal divisions are the pro-, meso-, and meta-thorax, and as it is essential that the component parts of each of these divisions should be thoroughly understood, they are here taken up separately, the parts being explained by letters on Pl. I, (Fig. 1, T.)

The prothorax (Fig. *pt*) is large and conspicuous from above, with but few exceptions, in the Bethylinæ, Emboleminæ, Dryininæ, Proctotrypinæ, and in some of the Scelioninæ, while in the other groups it is more variable, usually short and inconspicuous, sometimes very small, and often not, or scarcely, visible from above (*Telenomus*, etc.). It supports the head and front legs, and its principal component parts are: (Fig. *pn*) the pronotum, (Fig. *p*) the pleuron, and (Fig. *sp*) the praesternum.

The mesothorax is the largest division of the thorax. It supports the front wings and the middle legs, and variations and peculiarities noticeable in its various sclerites have been found to be of excellent specific and generic value. The principal sclerites are: (Fig. *ms*) mesoscutum, which is frequently subdivided into three parts by longitudinal furrows (Fig. *pf*) called the parapsidal furrows; it is then said to be trilobed. Fig. *m* becomes the middle lobe, Fig. *p* the parapsides scapulæ or lateral lobes. Fig. *s* is the meso-scutellum, usually designated as the scutellum, and has usually at the lateral basal angles (Fig. *ax*) two subtriangular sclerites termed axillæ. Fig. *mps* is the meso-postscutellum, often visible only as a transverse band, carina, or fold, and again quite distinct and armed with one or more strong spines or

thorns. By some authorities it is considered a sclerite of the metathorax. Fig. *tg* is the tegula or wing scale of front wing. The mesopleuron (Fig. *mp*) is composed of episternum and epimeron. The mesosternum is undivided and is frequently not separated from the pleural sclerites.

The metathorax, or third division of the thorax, supports the hind wings, hind legs, and the abdomen, and it also is quite variable in length, shape, and sculpture. The sides (Fig. *mtp*) are termed the metapleura, and the sclerite (Fig. *sp*) extending obliquely forward from the insertion of the hind legs to the base of the hind wing and behind the mesopleuron is the metepisternum; the upper surface (Fig. *mn*) is the metanotum. Fig. *sp* represents the position of the spiracles, while *ihn* shows the insertion of the hind wings.

The other normal sclerites are not differentiated.

THE WINGS.

In shape and neurulation, the wings exhibit the greatest diversity, and are of primary importance in classification. As a rule, the hind wings are veinless or the neurulation is meager (Pl. I, Fig. 5), the highest developed having but a single basal cell. They are rather broad and with a distinct lobe in the Bethylinæ, Embolemminæ, and the Dryininæ; broad in the Proctotryinæ, but without a distinct lobe; while in the other groups they are much narrowed toward base, and not especially widened toward apex, the apex being sometimes acute. The front wings are entirely veinless in only a single tribe, the Platygasterini, although another tribe, the Inostemmini, in the same subfamily, and a few genera in another subfamily, the Scelioninæ, are almost veinless, having only a submarginal vein terminating in a small knob or stigma.

The neurulation of the anterior wings reaches its fullest development in the Bethylinæ, Embolemminæ, Dryininæ, and Helorinæ, although even in these groups there are genera with almost veinless wings (*Cephalonomia*, etc.).

The neurulation of the first three of these groups mentioned more closely resembles that of the Chrysididæ and Scoliidæ; the Helorinæ and some genera in other groups that of the Braconidæ; while some genera in the Scelioninæ closely approach that of the Chalcididæ.

The great variation in the shape of the wings and the peculiarities of venation are fully brought out in the plates; but as the neurulation, in connection with other characters, is of primary importance in a systematic study of the family, it is important that the horismology of the wings be fully understood.

In Figs. 4 and 5, on Pl. I, by the use of the front wing of *Pristocera atra* Klug. and the hind wing of a belytid, as being the most specialized in the group, and, with the explanation given below, the technical terms may be easily acquired.

Horismology of the wings.

FRONT WING.

Longitudinal nerves.	Transverse nerves.	Cells or areolets.
<i>c.</i> Costal.	<i>b.</i> Basal.	1. Costal (closed).
<i>sc.</i> Subcostal or submarginal.	<i>tm.</i> Transverse median.	2. First basal.
<i>m.</i> Median.	<i>ftc.</i> First transverse cubital.	3. Second basal.
<i>sm.</i> Submedian.	<i>stc.</i> Second transverse cubital.	4. Anal.
<i>st.</i> Stigma, or marginal nerve stigmated.	<i>fr.</i> First recurrent.	5. Marginal or radial.
<i>ps.</i> Postmarginal or poststigmatal.	<i>sr.</i> Second recurrent.	6. First discoidal.
<i>r.</i> Radius or stigmal.	<i>d.</i> Discoidal.	7. Second discoidal.
<i>cub.</i> Cubital.		8. Third discoidal.
<i>sd.</i> Subdiscoidal.		9. First submarginal.
		10. Second submarginal.
		11. Third submarginal.
		12. First apical or postanal.
		13. Second apical.

HIND WING.

<i>c.</i> Costal.	<i>b.</i> Basal.	1. Costal cell (open).
<i>sc.</i> Subcostal.		2. Basal.
<i>cub.</i> Cubital		3. Anal.
<i>st.</i> Marginal or stigma.		

THE LEGS.

The shape of the legs, armature, tibial spurs, number of joints in tarsi, length, etc., also afford excellent characters in classification. In all groups, except sometimes in the Dryiniæ, the hind legs are the longest. The femora in the Bethylinæ are usually very much swollen, their tibiæ stout, often spiny or fossorial; in the Dryiniæ and Emboliminiæ they are, for the most part, obclavate; while in other groups they are usually clavate or but slightly swollen. The tarsi, except in the single genus *Iphetruchelus* Haliday, in which they are 4-jointed, are always 5-jointed. In all groups, except in the Dryiniæ, they are normal, but in this group the anterior tarsi in the females in most of the genera, are peculiarly modified, being chelate or furnished with a pair of pinchers or tongs, that evidently afford assistance in seizing and holding a living fulgorid, membracid, or jassid (on which in the larval stage they are parasitic), while in the act of oviposition.

The structure of the leg is explained in Pl. I, Fig. 1: *c c c*, coxæ, anterior, middle and posterior; *tr*, trochanters, one-jointed; *fa*, femora; *ta*, tibiæ; *tas*, tibial spurs; *tsi*, tarsi; *cl*, claws; *cls*, simple, *clt*, toothed, *clp*, pectinate; *ps*, pulvillus.

THE ABDOMEN.

The abdomen is usually composed of 8 visible tergites and 6 urites, although sometimes these are reduced in number to as low as 3. As in other families, it exhibits great variation in shape and size and in its

attachment to the metathorax, the terms sessile, subsessile, or petiolate expressing the form of attachment. It is, however, never attached to the dorsum of the metanotum, as in the Evaniidæ and some Braconidæ.

In counting the abdominal segments, the basal one is usually referred to as the first segment or the petiole; sometimes, however, this segment is so short as to be invisible from above, or at least not visible until the abdomen has been detached from the metathorax; it is then usual to designate the second as the first.

The shape of the abdomen is generally ovate, ovate-conic, or oval, but often oblong-oval, broadly oval, fusiform, or linear. It is rarely greatly compressed, although frequently depressed or somewhat flattened.

In some genera, in the Platygasterinæ and Scelioninæ, the females are furnished with a peculiar horn-like structure at the base of the abdomen that projects forward over the metathorax, and, indeed, often as far forward as the head (Pl. XI, Fig. 6). It gives to these insects a singular appearance, but otherwise has no functional significance, being merely a sexual peculiarity.

The abdomen reaches its greatest length in proportion to the rest of the body, probably in the genus *Macroteleia* (Pl. IX, Fig. 6), and its most unique shape in *Sactogaster* (Pl. XII, Fig. 4).

Connected with the abdomen are the important organs of reproduction, the ovipositor, etc., which will now be described.

THE OVIPOSITOR.

In the differentiation of its parts, the ovipositor, in this family, agrees with other terebrant Hymenoptera, the only visible difference being that in the whole group, except in three or four abnormal individuals, the outer sheaths are conjoined and form a tube or scabbard at the tip of the abdomen that affords protection for the ovipositor proper and its two spiculæ when not in use. Distinct sutures are visible in this tube, and after death it can be readily separated into two plates.

This tubular formation of the sheaths reaches its highest development in the genus *Proctotrypes*.

On Pl. I two forms are shown. Fig. 6 represents that of *Proctotrypes caudatus* Say, our largest species. Here the tube is as long as the abdomen, slightly compressed and curving downward at tip. It is readily detached, and in the figure is represented partly detached, in order to show the internal structure of the ovipositor. The terebra, or ovipositor proper (*tba*), is the piece through which the egg passes; it is composed of three pieces, a broad upper plate and two spiculæ (*spc*) or lower plates, the latter united to the former by a dovetailed joint (see Fig. 9, A and B). These three pieces are dilated and lobed at base (*spl*), and are connected by strong muscles to a basal plate (*bp*)

with the internal walls of the abdomen, their tips being sharply pointed, needle-like, and usually microscopically serrated. The spiculæ are used for piercing or boring, and move forward and backward on the upper plate as a saw in the hands of a carpenter.

Figs. 7 and 8 represent the terebra of *Epyris grandis*, one of the largest species in our fauna. The different parts are lettered identically as in *P. caudatus*. Here the tube (or outer sheaths conjoined) (*shs*) is short and conical, and is the form most commonly met with in the family.

At Fig. 9 two cross-sections of the ovipositor proper are shown—A from near the base, B from nearer the apex, the breadth and thickness varying slightly in accordance with the tapering of the ovipositor. The transverse diameter of the upper plate averages about 0.042^{mm}; of the basal plates or spiculæ, 0.015^{mm}, while vertically they average 0.018^{mm} in diameter.

It will be seen that the structure of this cross-section agrees fairly well with others that have been made of the terebrant Hymenoptera, the only real difference being the much larger canals through the center of the three pieces and the small additional canal in the lower inner angle of the spiculæ.

All the canals have apparently a membranous lining, and unless they have something to do with the control of the ovipositor their function is not apparent.

MALE GENITALIA.

It takes so much time to thoroughly study the organs of generation, on account of their minute size, in most groups of the Hymenoptera Parasitica, besides the almost absolute certainty of the destruction of valuable specimens, that most entomologists are content to depend upon external characters for the recognition of species, and consequently comparatively little is known of the male genitalia in any family composing this section, although there can be no doubt as to the specific and classificatory value these organs possess.

In order to give some idea of these organs in the Proctotrypidæ, on Pl. I, I have figured the male genitalia of three different species.

Fig. 10 represents the male genitalia of *Epyris carbonarius*: A, the parts viewed from above; *p*, penis or penal sheath, strongly exserted, in outline narrow, harp-shaped, although strongly flattened like a leaf, bilobed at apex, the lobes with rounded margins; at the middle (*o*) is a longitudinal slit or opening, the orifice for the fleshy penis. On each side of the penis, attached to a swollen lobe at base, are two horny sheaths, a pair on each side, that may be termed respectively the upper and lower sheaths; *us* is the upper sheath. In this species it is slender and gradually acuminate, or lanceolate; *ls* is the lower sheath; it is much larger, broader, and more rounded at apex, although it is here divided by a longitudinal slit into two more or less distinct points, each

point being surrounded by stiff hairs; outwardly the surface is convex and smooth, except at about two-thirds its length, where there is a tuft of long hairs. At B the same parts are shown as viewed from beneath, together with other parts not visible from above; *us*, the upper sheath; *ls*, the lower sheath; *p*, penis; *pc*, penal claspers, the outer margin of which are fringed with several long spines or hooks; *bl*, swollen basal lobes, to which the upper and lower sheaths are attached. All these organs, except the tips of the upper and lower sheaths, when not in use, are withdrawn within the apical abdominal segments and are only visible when exerted. The swollen basal lobes (*bl*) and the penal claspers (*pc*) seem not to have been noticed before, and I believe are now pointed out for the first time.

Fig. 11 represents the male genitalia of *Proctotrypes caudatus* Say, as seen from the side after the removal of the left ventral spine: *vs*, right ventral spine; *us*, upper sheath, slender and clavate; *ls*, lower sheath, very broad and flat and terminating in four chitinous lobes.

Fig. 12 represents the same organs in the male of *Scleroderma cylindrica*, after Westwood: *us*, upper sheaths, "the extremities of which are thin and incurved"; *ls*, lower sheaths, "broad and each with a broad, simple stipes (*dd*), and four terminal lobes (*e*), two of which are setose at the tips, and one at least more rigid than the other parts."

In Fig. 13, Pl. I, I represent the ovipositor of *Scleroderma ephippium*, after Westwood. In his explanation he says:

The parts of the ovipositor itself are vertically compressed, the recurved bases of the spiculæ (*e*), with their muscular angulated lobe or catch (*f*), being represented as flattened. By strong protrusion of the spiculæ beyond the extremity of terebra, the curved basal portions of the former are straightened and brought forward to the base of the terebra, where their dilated angular form prevents them from further protrusion. The parts marked *e. e.* are the membranous plates connecting the base of the spiculæ and of the terebra itself with the interior of the abdomen.

HABITS OF THE PERFECT INSECTS.

The imagos are most frequently found wherever their hosts are most plentiful and their lives are of short duration, seldom extending beyond a few days. Those I have kept in confinement live but four or five days, although in freedom they probably live longer.

The favorite resorts for diapiiids, bethyids, and proctotrypids are low, moist places, where there is a luxuriant growth of vegetation and a black or mucky soil, the decaying vegetation affording excellent food for their hosts—dipterous and other larvæ. The opening buds and newly formed leaves of plants and trees, and especially along the outskirts of a dense forest or wood, are particularly attractive to platygasterids and telenomids, while the bethyids, dryinids, and scelionids, as a rule, frequent the more open fields. In Florida, dry sandy knolls, where the scrub oak grows, are the favorite resort of the bethyids. Species in the genera *Epyris* and *Mesitius*, I have taken most frequently

on trees badly infested with lepidopterous leaf-rollers and miners. Other genera frequent fungi, while from recent observations ant nests and their vicinity are good fields for some rare species in other genera.

As a rule, flowers are less frequently visited by the tiny species of this family than in the other hymenopterous families, except those flowers that afford protection or food for their hosts. Various platygasterids are the only members of the family that I can recall having captured on flowers, and in such cases the flowers were invariably infested with cecidomyiid larvæ, on which they were parasitic.

When captured, as with other Hymenoptera, some proctotrypids give off a waspy or pungent odor. Prof. Westwood has recorded the fact, taken from Mr. Saunders's MS. notes, that the female *Scleroderma linearis*, taken in a house September 25, 1849, stinging his neck, when captured "threw out a pungent fœtid odor."

DIMORPHISM AND PARTHENOGENESIS.

There is scarcely any doubt but that many of the wingless forms to be found in various genera of this family are only dimorphic forms of winged species, although comparatively little is positively known on the subject. Until such forms are bred from generation to generation, however, as has been done in the Cynipidæ by Dr. H. Adler, we must be content to describe these forms as distinct species, for any other course would be unscientific or guesswork. In this monograph I have not hesitated, therefore, to give these apterous individuals a separate specific name. Doubtless also, as in the Blastophagæ, or fig-insects, trimorphism occurs.

Prof. Westwood,¹ in speaking of the genus *Scleroderma* says:

Some of the species of this genus exhibit a remarkable instance of dimorphism and even trimorphism in the females, some of which are furnished with certain of the characteristics of the opposite sex. Sir S. S. Saunders, in addition to the ordinary female of *S. ephippium* destitute of wings and ocelli, found one agreeing in the general form of the body with the females, but possessing the fully developed wings and ocelli of the male. Remembering the diversity in the size of the heads of different individuals among some of the species of ants, I was curious to ascertain how far this character was to be found in these different individuals. Their heads were, therefore, drawn of a large size by the camera lucida, which was then carefully reduced by measurement, when it appeared that the heads of the normal females were slightly longer than wide, whereas the head of the winged and ocellated females was considerably broader than long, although its length agreed very nearly with that of the normal female. Their relative proportions may be expressed by the following figures:

	Long.	Wide.
Head of normal female without wings or ocelli.....	77	75
Head of female with wings and ocelli.....	78	90

¹ Trans. Ent. Soc. Lond., 1881, p. 120.

These measurements may be contrasted with those of the normal male of *S. cylindrica* from Prevesa, drawn to the same scale:

	Long.	Wide.
That of the winged and ocellated male being	61	60
That of the wingless and unocellated female being	97	78

The anomaly is carried still further in the Ceylonese *S. vigilans*, of which I have only seen two female specimens, one of which had fully developed wings and ocelli, whilst the other was wingless, but possessed ocelli. But the anomalous characters of the genus are not confined to the females, since Sir S. S. Saunders captured a wingless male provided with slender antennæ and with three large ocelli, but entirely destitute of wings.

Mr. Haliday's observation on his *Labolips innupta* is the only case bearing directly upon parthenogenesis in the Proctotrypidæ, known to me. He found the ovaries form each an oblate spheroid, entirely covered with regular small protuberances, as if they were composed of an agglomeration of globular cells; the separate oviducts, in the short axis of the ovary, of considerable volume, and nearly as long as the transverse diameter of the ovary, united into a short excretory canal; no seminal receptacle was discovered, while in both specimens examined there was apparently a malformation of the malpighian vessels, so that he could not determine their number with absolute certainty.

Mr. Haliday considered the form of the ovaries without a parallel among the rest of the Hymenoptera, and the absence of a seminal receptacle, if his observation could be depended upon as exact, most singular, as this appendage is found in form even in the agamous Cynipidæ.

TRANSFORMATIONS OR LIFE HISTORY.

THE EGGS.

The eggs of the Proctotrypids known to me are ovate or oblong in shape, with a more or less distinct peduncle at one end, and agree well in general with many in the family Ichneumonidæ, although those in the subfamily Platygasterinæ, on account of the longer peduncle, more closely resemble those in the family Cynipidæ.

EMBRYOLOGICAL DEVELOPMENT.

Ganin,¹ 1869, was the first biologist to study the embryological development of certain proctotrypids—*Platygaster*, *Teleas*, etc., while an American biologist, Prof. Ayers,² has given the embryological development of a Scelionid, in his paper entitled "On the Development

¹Ueber der Embryonalhülle der Hymenopt. und Lepidopt. Embryonen, St. Petersburg, 1869.

²Mem. Boston Soc. Nat. Hist., vol. III, 1884. This insect is not a true *Teleas* and is either one of two insects described in this memoir, viz., *Cacus acanthi* or *Baryconus acanthi*.

of *Ecanthus niveus* and its Parasite *Teleas*." Both authors may be consulted to the advantage of the student.

In lieu of original work of this kind I have deemed it advisable to reproduce here a summary of Ganin's work, by Balfour, together with his figures, in order to illustrate the remarkable changes the embryolarva must undergo before assuming the normal larval stage.

Balfour says:

The very first stages are unfortunately but imperfectly known, and the interpretations offered by Ganin do not in all cases appear quite satisfactory. In the earliest stage after being laid the egg is inclosed in a capsule produced into a stalk (Fig. 1, A). In the interior of the egg there soon appears a single spherical body, regarded by Ganin as a cell (Fig. 1, B). In the next stage three similar bodies appear in the vitellus, no doubt derived from the first one (Fig. 1, C). The central one presents somewhat different characters to the two others, and, according to Ganin, gives rise to the whole embryo. The two peripheral bodies increase by division, and soon appear as nuclei imbedded in a layer of protoplasm (Fig. 1, D, E, F). The layer so formed serves as a covering for the embryo, regarded by Ganin as equivalent

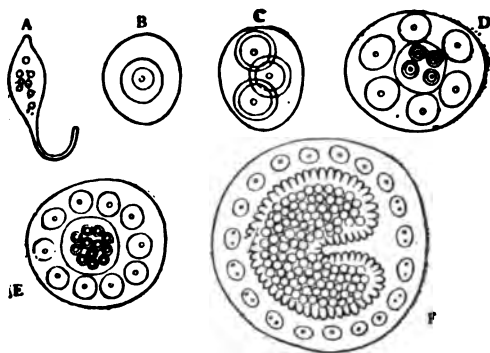


FIG. 1.—Embryonic development of platygaster: A, egg; B, primitive cell; C, additional cells developed from the first; D and E, further cellular development; F, final embryonic stage. (After Ganin.)

to the amnion (? serous membrane) of other insect embryos. In the embryo cell new cells are stated to be formed by a process of endogenous cell formation (Fig. 1, D, E). It appears probable that Ganin has mistaken nuclei for cells in the earlier stages, and that a blastoderm is formed as in other insects, and that this becomes divided in a way not explained into a superficial layer which gives rise to the serous envelope and a deeper layer which forms the embryo. However this may be, a differentiation into an epiblastic layer of columnar cells and a hypoblastic layer of more rounded cells soon becomes apparent in the body of the embryo. Subsequently to this the embryo grows rapidly, till by a deep transverse constriction on the ventral surface it becomes divided into an anterior cephalothoracic portion and a posterior caudal portion (Fig. F). The cephalothorax grows in breadth, and near its anterior end an invagination appears, which gives rise to the mouth and œsophagus. On the ventral side of the cephalothorax there is first formed a pair of claw-like appendages on each side of the mouth, then a posterior pair of appendages near the junction of the cephalothorax and abdomen, and lastly a pair of short conical antennæ in front.

At the same time the hind end of the abdomen becomes bifid, and gives rise to a fork-like caudal appendage; and at a slightly later period four grooves make their

appearance in the caudal region, and divide this part of the embryo into successive segments. While these changes have been taking place in the general form of the embryo, the epiblast has given rise to a cuticle, and the hypoblastic cells have become differentiated into a central hypoblastic axis—the mesenteron—and a surrounding layer of mesoblast, some of the cells of which form longitudinal muscles.

With this stage closes what may be regarded as the embryonic development of platygaster. The embryo becomes free from the amnion, and presents itself as a larva, which from its very remarkable characters has been spoken of as the Cyclops larva by Ganin.

The larvæ of three species have been described by Ganin, which are represented in Fig. 2, A, B, C. These larvæ are strangely dissimilar to the ordinary hexapod

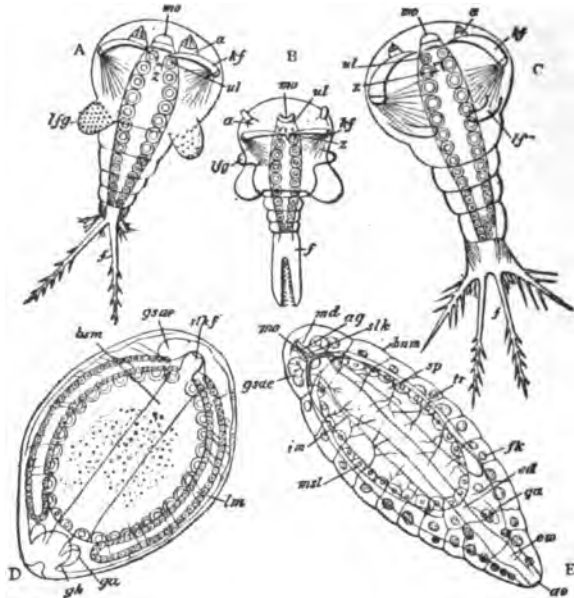


FIG. 2.—Embryonic larval development of platygaster: A, B, C, Cyclops larvæ of three species of platygaster; D, second larval stage; E, third larval stage; *mo*, mouth; *a*, antenna; *kf*, hooked feet; *efg*, lateral feet; *f*, branches of tail; *nl*, lower lip; *alkf*, oesophagus; *gsac*, supra-oesophageal ganglion; *bam*, ventral epiblastic plate; *lm*, lateral muscles (the letters also point in D to the salivary glands); *gh*, proctodæum; *ga*, generative organs; *md*, mandibles; *ag*, ducts of salivary glands; *sp*, (in E) salivary glands; *mle*, stomach; *ed*, intestine; *ew*, rectum; *ao*, anus; *tr*, trachea; *fk*, fat body. (After Ganin.)

type, whether larval or adult. They are formed of a cephalothoracic shield with the three pairs of appendages (*a*, *kf*, *lfy*), the development of which has already been described, and of an abdomen formed of five segments, the last of which bears the somewhat varying caudal appendages. The nervous system is as yet undeveloped. The larvæ move about in the tissues of their hosts by means of their claws.

The first larval condition is succeeded by a second with very different characters, and the passage from the first to the second is accompanied by an ecdysis.

The ecdysis commences at the caudal extremity, and the whole of the last segment is completely thrown off. As the ecdysis extends forwards the tail loses its segmentation and becomes strongly compressed, the appendages of the cephalothorax are thrown off and the whole embryo assumes an oval form without any sharp distinction into different regions and without the slightest indication of segmentation (Fig. 2, D). Of the internal changes which take place during the shedding of the cuticle, the first

is the formation of a proctodæum (*gh*) by an invagination, which ends blindly in contact with the mesenteron. Shortly after this a thickening of the epiblast (*bem*) appears along the ventral surface, which gives rise mainly to the ventral nerve cord; this thickening is continuous behind with the epiblast, which is invaginated to form the proctodæum, and in front is prolonged on each side into two procephalic lobes, in which there are also thickenings of the epiblast (*gsae*), which become converted into supra-oesophageal ganglia, and possibly other parts.

Toward the close of the second larval period the muscles (*lm*) become segmentally arranged, and give indications of the segmentation which becomes apparent in the third larval period. The third and last larval stage (Fig. 2, E) of *Platygaster*, during which it still remains in the tissues of its host, presents no very peculiar features. The passage from the second to the third form is accompanied by an ecdysis.

THE LARVÆ; THEIR HABITS AND PUPATION.

The larvæ are all, apparently, internal feeders, apodous and with minute mandibles. Those living in eggs transform into pupæ within the empty egg-shell of their hosts; sometimes a half dozen or more being found within a single egg-shell, although of the larger scelionids—*Scelio*, *Macroteleia*, etc.—only a single specimen is found in each egg. Those species that affect the larvæ or pupæ of other insects either gnaw their way out and spin small silken cocoons (*Cephalonomia* and other bethylids), or else weave silky or parchment-like cocoons, often arranged in parallel rows, side by side, within the empty skin of their host (*Platygaster* and others).

Lygocerus and allied genera, living in the Aphididæ, gnaw a hole through the ventral surface of the aphid, and after securely fastening the aphid by a silk-like secretion to the leaf or twig upon which it has been feeding, pupate within the body of their host, which, in lieu of a cocoon, affords ample protection for the larvæ to undergo their transformations. I know of no proctotrypid that transforms loosely into a pupa without a covering or protection of some kind, as is frequently, if not invariably, the case amongst the Chalcididæ.

DISTRIBUTION.

The Proctotrypidæ are apparently widely distributed over the whole world, although outside of Europe little is as yet known of the exotic forms, and it is not possible, therefore, to generalize upon the genera and their distribution. From an examination of various exotic collections of Hymenoptera, it is safe to predict the species will be found to be numerous and widely distributed, but far less numerous than the Chalcididæ; judging from my own collecting I should say less than one-fiftieth in number. Only a very small percentage of the species is yet described.

Our species, except in a few cases, fit very well into the established European genera; but from South America it was found necessary to erect many new genera, and doubtless this will be found to be necessary with collections brought from other regions. Very few species

have been described from Asia, Africa, and Australia; only a few isolated descriptions of species, scattered here and there through the literature, could be found; and undoubtedly many remarkable and interesting forms will be discovered in the rich insect faunas of those countries.

CLASSIFICATION.

The name of the family, Proctotrypidæ, is derived from the genus *Proctotrupes* or *Proctotrypes*, established by Latreille in his *Précis des Caractères Génériques des Insectes*, published in 1796, and there placed with the *Ichneumonidæ*. It is derived from two Greek words *πρωκτός*, the anus, + *τροπάω*, bore, pierce through, in allusion to the structure of the ovipositor, and I here follow late authorities in spelling the word *Proctotrypes*, although as a rule I strongly oppose changing a well-established zoölogical name.

From 1796 down to 1839 additional genera, belonging to this family, were established by Latreille, Dalman, Klug, Jurine, Spinola, Nees, Westwood, Walker, Haliday, and others, and various groups or families were proposed for their reception, according to the views of the different authors, the affinities of the genera not being fully understood. Some of the genera were classed with the *Cynipidæ*, *Scoliidæ*, *Mutillidæ*, *Chalcididæ*, or *Braconidæ*, or were considered to be entitled to family rank, and the greatest confusion existed as to their affinities and proper position.

An excellent historical sketch of the development of the family has been given by Dr. Arnold Förster, in his *Hymenopterologische Studien*, Heft II, and it will suffice here to call attention only to the two authors who wrote just previous to his work. To them we are mainly indebted for a proper conception of the family, as now understood, as well as for bringing order out of the chaos that existed up to their time. I also call attention to a few authors who wrote subsequent to the appearance of Förster's work.

In 1839 Haliday, in his "*Hymenopterorum Synopsis*," properly defined some of the groups as now understood, although he considered them to be of family rank, placing some among the *Terebrantia* and some among the *Aculeata*.

In order to illustrate his method, I give below such portions of his scheme of arrangement as refer to them:

Suborder 2.—*Petioliventres*.

Stirps 3.—*Terebellifera*.

cc. *Trochanters* exarticulati. *Terebra* abdominis apice exerenda per foramen apicale vel rimam transversam, aut exserta. *Antennæ* articulis ad summum 15. *Alæ* disco ferme exareolatae, radio et cubito distantibus aut obsoletis.

Tribe 2.—*OXYURA*.

f. Tibiæ anticæ calcari unico.

g. Mandibulæ edentulæ.

Fam. 10.—*Proctotrupidæ*.

gg. Mandibulæ dentatæ.

h. Abdomen *fem.* longissimum, filiforme, articulatæ.

Fam. 9.—*Peleciniidæ*.

hh. Abdomen petiolatæ, immarginatæ.

Fam. 11.—*Diapriidæ*.

hhh. Abdomen marginatæ, subsessile aut subpetiolatæ.

Fam. 12.—*Scelionidæ*.

ff. Tibiæ anticæ bicalcaratæ.

Fam. 13.—*Ceraphronidæ*.

" " " " " " "

Tribe 4.—*Halticoptera*.

" " " " " " "

ff. Os epalpatæ. Alæ angustissimæ, nervo brevissimo.

Fam 17.—*Mymaridæ*.

" " " " " " "

Stirps 4.—*Aculeata*.

c. Antennæ utriusque sexus articulis eodem numero. Pedes subleves. Alæ posticæ incisæ.

Tribe 6.—*Cenoptera*.

d. Antennæ 10-articulatæ. Caput deflexum.

Fam 19.—*Dryinidæ*.

dd. Antennæ 12-13-articulatæ. Caput porrectum. Rapacia. Larvæ entomophagæ.

Fam 20.—*Bethylidæ*.

Chrysidis inde connexi, hinc *Scoliadis*.

It will be seen from the above "scheme of arrangement" that Haliday widely separates some closely allied groups, interpolating other families between them; and, moreover, with our larger and better acquaintance with these groups, the arrangement is unnatural and the characters he has employed, in defining them, will not now always hold good.

About the same time, 1840, Prof. Westwood, in his memorable work, "Introduction to the Modern Classification of Insects," brought all of these families together and properly united them as one, under the name Proctotrupidæ. He then separates the family into six subfamilies, as follows:

- (1) MYMARIDES. Head transverse areolate; antennæ inserted above the middle of the face, ♂ long, slender, and elbowed, ♀ clavate; mouth destitute of palpi; wings narrowed, densely ciliated, with a very short subcostal nerve.
- (2) PLATYGASTERIDES. Abdomen sessile, depressed, first segment not campanulate; antennæ elbowed, 10-12-jointed, inserted near the mouth.
- (3) CERAPHRONTIDES. Abdomen subsessile, campanulate, terminal and ventral segments carinated; antennæ elbowed, inserted near the mouth; wings nearly exareolate.

- (4) **GONATOPIDES**. Abdomen convex, not campanulate, last ventral segment carinated; antennæ porrected, 10-jointed; hind wings lobed; mandibles toothed.
- (5) **PROCTOTRUPIDES**. Abdomen subcesile, campanulate; antennæ porrected, 12-jointed, inserted beneath the front; maxillary lobe tripartite.
- (6) **DIAPRIIDES**. Abdomen petiolate, campanulated; antennæ inserted on the front, 12- or 15-jointed; maxillary palpi long, 5-jointed.

His group (2) included the Scelioninæ with the Platygasterinæ; group (4) the Bethylinæ, Emboleminæ and Dryininæ; while group (6) included the Belytinæ and the Diapriinæ. All the groups are undoubtedly closely related, and Westwood's scheme was the most natural one formulated up to the time of Förster.

It was just sixteen years after the publication of Westwood's work that Dr. Förster's studies in the "Chalcidiæ und Proctotrupii," so often quoted in these pages, appeared. After an excellent historical review of the two groups, already referred to, he makes use of the following characters to distinguish them:

CHALCIDIÆ. ♂. Fühler immer gebrochen, mit ein oder mehreren kleinen Ringeln (Zwischengliedern) zwischen Stielchen und Geissel.

♀. Der Legebohrer unterhalb (d. h. vor) der Spitze des Hinterleibs entspringend.

PROCTOTRUPII. ♂. Fühler gebrochen oder ungebrochen, zwischen dem Stielchen und der Geissel keine Ringel (Zwischenglieder), selten ungebrochen mit einem kleinen Ringel.

♀. Der Legebohrer aus der Spitze des Hinterleibs entspringend.

After tabulating and defining the families of the Chalcidiæ, he separates the Proctotrupii, on page 20, into 9 families, according to the following scheme:

- a. Hinterflügel mit einem lappenförmigen Anhang, oder, wo die Flügel beim ♀ fehlen, mit Raubfüssen versehen.....*Dryinoidæ*.
- aa. Hinterflügel ohne den lappenförmigen Anhang.
 - b. Die vordersten Schienen mit zwei Dornen*Ceraphronoidæ*.
 - bb. Die vordersten Schienen mit einem Dorn.
 - c. Mandibeln ungezähnt.....*Proctotrupoidæ*.
 - cc. Mandibeln gezähnt.
 - d. Der Hinterleib seitlich gerandet; Fühler über dem Mundrande eingefügt.
 - e. Flügel mit einem Ramus marginalis und bisweilen auch einem Ramus stigmaticus; die ungeflügelten Gattungen ohne Nebenaugen*Scelionoidæ*.
 - ee. Flügel ohne Ramus marginalis und stigmaticus; alle Gattungen mit Nebenaugen*Platygasteroidæ*.
 - dd. Hinterleib seitlich nicht gerandet; die Fühler weit über dem Mundrande eingefügt.
 - f. Hinterflügel ohne Spur einer Mittelader.
 - g. Die Hinterflügel sehr schmal, fast linienförmig...*Mymaroidæ*.
 - gg. Die Hinterflügel breiter, nicht linienförmig.....*Diaprioidæ*.
 - ff. Die Hinterflügel mit einer Mittelader.
 - h. Vorderflügel entweder ohne oder mit einer regelmässigen Grundader; Geissel ohne Ringel (annellus)....*Belytoïdæ*.
 - hh. Vorderflügel mit einer unregelmässigen, die Unterrandader nicht erreichenden, gekrümmten Grundader, welche eine unregelmässige Zelle in der vorderen Schulterzelle bildet; Geissel mit einem Ringel*Heloroidæ*.

Subsequently, farther on in the body of the work, Förster again subdivides his family Dryinoidæ into three families: Dryinoidæ, Embolemoidæ, and Bethyloidæ. He then follows with his generic tables, in which, including the *Mymaroidæ*, no less than one hundred and twenty-one genera are defined, about seventy being new.

Dr. Förster's work is by far the most philosophical, satisfactory, and important contribution published on this intricate family, and has formed the basis of my own work. Since his day, not taking into consideration mere descriptive work, no systematic work has been attempted except a short paper by A. H. Haliday, published in the Dublin Natural History Review, 1857; a series of articles by the Swedish entomologist C. G. Thomson, published in *Öfversig af Kongliga Svenska Vetenskaps-Akademiens Förhandlingar*, from 1857 to 1859, and an excellent contribution by Prof. J. O. Westwood on the subfamily Bethyloides, in his *Thesaurus Entomologicus Oxoniensis*, 1874.

Haliday, in his paper, proposed some new genera in the Diapriidæ (probably before seeing Förster's work) that unfortunately prove to be synonyms of some of those characterized by Förster.

Thomson's contribution is much more elaborate; besides describing some new genera he separated the family into eleven tribes (defined, but without a synoptic table), arranged as follows:

- Tribus I. Proctotrupini.
 II. Belytini.
 III. Ceraphronini.
 IV. Diapriini.
 V. Ismarini.
 VI. Helorini.
 VII. Scelionini.
 VIII. Platygasterini.
 IX. Telenomini.
 X. Dryinini.
 XI. Epyrini.

It is also quite evident that Thomson, in the beginning of his studies in the family, was unacquainted with Förster's work; and, considering this fact, his tribes agree quite closely with the families proposed by Förster. His tribus XI, Epyrini, equals the Bethyloidæ of Förster. In separating the Ismarini from the Belytoidæ and the Telenomini from the Scelionoidæ and elevating them to an equal rank with his other tribes it appears to me Thomson gave too much importance to trivial characters.

The arrangement of his tribes also does not show the relationship they bear to each other. I consider the Ceraphronini much more closely allied to the Epyrini and Dryinini, while he has them widely separated. The Belytini and the Diapriini are unquestionably closely allied, and he has interpolated the Ceraphronini between them; while the Helorini he places next to the Scelionini, with which they have few

characters in common, their nearest allies being the Proctotrypini and the Belytini.

Prof. Westwood's contribution, mentioned above, is a most valuable one, in which some new genera and many new species are described and illustrated. It is of especial value for clearing up many obscure points in the old, imperfectly described genera, for the very full diagnoses of all the genera in the Bethylinæ known to him, and for the admirable illustrations of the mouth parts and other salient characters.

Other European contributors to a knowledge of the family are Walker, Mayr, Ruthe, Cameron, Marshall, Mik, Giard, etc.

In America no systematic study of the family has been before attempted.

The American writers on the family, besides myself, are Say, Halde-
man, Cresson, Patton, Packard, Provancher, Howard, Riley, and
Forbes, and, excepting an admirable translation of Förster's tables by
Mr. L. O. Howard, the work thus far done has been purely descriptive,
confined to isolated descriptions of genera or species. These will be
found recorded in their proper place in this work and require no special
mention here.

Förster separated the Proctotrupii into eleven families. In the pres-
ent work, ten of these are recognized as subfamilies. His family
Mymaroidæ (= *Mymaridæ* Haliday) I have not included, as I believe
with Haliday, who first proposed the name, that it is a group entirely
distinct from this family, more closely allied to the Chalcididæ than to
the Proctotrypidæ and entitled to rank with other families of the
Hymenoptera Terebrantia.

In the arrangement of the ten subfamilies or natural groups recog-
nized in this family I have attempted to show their true relationship,
and, although full diagnoses of them are given in their proper place in
the body of the work, I believe the following table will be found all
that is necessary to facilitate their recognition:

TABLE OF SUBFAMILIES.

Wingless forms.....	6
Winged.	
Posterior wings not lobed.....	2
Posterior wings lobed; anterior wings with 1 or 2 basal cells.	
Head oblong; antennæ inserted at the clypeus, 12- or 13-jointed in both sexes.	
	Subfam. I, BETHYLINÆ.
Head not oblong.	
Head globose; front wings with a lanceolate stigma; anterior feet never chelate; antennæ in ♀ 13-jointed, in ♂ 10-jointed.	
	Subfam. II, EMBOLEMINÆ.
Head transverse; front wings usually with a large or semicircular stigma; anterior feet often chelate; antennæ 10-jointed in both sexes.	
	Subfam. III, DRYININÆ.
2. Antennæ inserted on the middle of the face, often on a frontal prominence....	4
Antennæ inserted at the clypeus.	
Abdomen acute or margined at the sides, sessile or subpetiolate.....	3

- Abdomen not margined at sides, sessile or subsessile. Anterior tibial spur strongly forked; antennæ in ♀ usually 10-11-jointed, in ♂ 11-jointed; front wings never with a post-marginal vein, the stigmal vein long, the marginal often stigmated.....Subfam. IV, CERAPHRONINÆ.
3. Front wings most frequently with marginal and stigmal veins; antennæ in both sexes usually 12-jointed, in ♀ sometimes 11-jointed, or 7-jointed when the claval joints coalesce...Subfam. V, SCELIONINÆ.
- Front wings always without marginal and stigmal veins and most frequently entirely veinless, at the most with only a clavate submarginal vein; antennæ never more than 10-jointed, usually alike in both sexes, rarely only 8- or 9-jointed....Subfam. VI, PLATYGASTERINÆ.
4. Front wings with the marginal vein linear, not stigmated. 5
- Front wings with the marginal vein stigmated, the costal cell closed.
- Mandibles dentate; antennæ 15-jointed; claws pectinate,
- Subfam. VI, HELORINÆ.
- Mandibles edentate; antennæ 13-jointed, with a ring joint; claws simple,
- Subfam. VIII, PROCTOTRYPINÆ.
5. Front wings with a distinct basal cell and usually with a distinct marginal cell (the latter rarely entirely wanting); hind wings always with a basal cell; antennæ 14 to 15 jointed; labial palpi 3-jointed.....Subfam. IX, BELYTINÆ.
- Front wings with the brachial cell seldom distinct, the median nervure being usually obsolete, the marginal cell never complete, usually entirely wanting; hind wings always without a cell; antennæ 12-, 13-, or 14-jointed; labial palpi 2-jointed,
- Subfam. X, DIAPRIINÆ.

WINGLESS FORMS.

6. Abdomen acutely margined at sides..... 7
- Abdomen not margined at sides.
- Fore femora much swollen.
- Head oblong; antennæ 12-to 13-jointed in both sexes, inserted near the mouth.....Subfam. BETHYLINÆ.
- Head transverse or globose.
- Anterior feet normal; antennæ in ♀ 13-jointed.....Subfam. EMBOLEMINÆ.
- Anterior feet chelate; antennæ in ♀ 10-jointed.....Subfam. DRYININÆ.
- Fore femora not much swollen.
- Mandibles edentate.....Subfam. PROCTOTRYPINÆ.
- Mandibles dentate.
- Antennæ inserted near the mouth.
- Anterior tibial spur 2-pronged.....Subfam. CERAPHRONINÆ.
- Antennæ inserted on a frontal prominence.
- Labial palpi 3-jointed.....Subfam. BELYTINÆ.
- Labial palpi 2-jointed.....Subfam. DIAPRIINÆ.
7. Antennæ 10-jointed; labial palpi 1-jointed.....Subfam. PLATYGASTERINÆ.
- Antennæ 12-jointed or with a solid club 7-jointed; labial palpi 2- or more, jointed.....Subfam. SCELIONINÆ.

Subfamily I. BETHYLINÆ.

Head oblong, horizontal, the occipital line complete. Ocelli often absent; when present 3, triangularly arranged. Mandibles usually large and broad, from 2- to 6-dentate. Maxillary palpi 4- to 6-jointed; labial palpi 2- to 3-jointed. Antennæ not elbowed, filiform or setaceous,

12- to 13-jointed, inserted in a clypeal fovea, the clypeus being more or less distinctly carinated. Pronotum large, well developed, narrowed before; mesonotum short, transverse, the scapulæ rarely entirely separated; scutellum subtriangular, rarely entirely wanting, the axillæ not separated; metathorax large, quadrate. Front wings most frequently with a small, stigmated marginal vein (sometimes with a parastigma), a radial and two basal cells, the radial cell rarely distinctly closed; occasionally the marginal and radial nervures are wanting or abbreviated; sometimes there is but a single basal cell, rarely entirely wanting. Hind wings distinctly lobed, veinless, except along the costa at base. The apterous forms are usually without ocelli and with minute eyes. Abdomen subpetiolate, ovate, or conic-ovate, depressed, composed of 8 segments. Legs rather short, the femora and tibiæ stout, most frequently swollen, tibial spurs 1, 2, 2, well developed, the tarsi 5-jointed, the claws often with a tooth within.

The *Bethylinae*, so far as we at present know, are parasitic on coleopterous and lepidopterous larvæ, and before pupating most of them spin cocoons. The majority of the genera comprise species winged in both sexes; but in a few genera, viz, *Pristocera*, *Isobrachium*, *Scleroderma*, *Dissomphalus*, *Apenesia*, and *Cephalonomia*, the male alone is winged, the female, except in *Cephalonomia* being always apterous. Usually the disparity between the sexes in size and appearance is such, that, when captured at large, they cannot be satisfactorily correlated. In *Cephalonomia* a dimorphic form occurs; for, whereas the female is usually wingless and without ocelli, at times a winged form with ocelli is produced.

The European type of the genus *Cephalonomia formiciformis* Westw. has been bred in England and Germany from mushrooms infested with coleopterous larvæ. In this country species are reared from cynipidous galls, infested with coleopterous, lepidopterous, and other inquilines, and it is believed the genus is parasitic on coleopterous larvæ. Species belonging to the genera *Isobrachium*, *Apenesia*, and *Pristocera* have been taken in ant nests, and it is presumable they are parasitic on myrmecophilous Coleoptera. *Anoxus* is parasitic on the coleopterous genus *Cis* living in fungi, and I have reared *Ateleopterus tarsalis* from raisins affected with *Silvanus surinamensis*.

The new genus *Lælius* is parasitic on the coleopterous family Dermestidæ, while species in the genera *Bethylus*, *Perisemus*, and *Goniozus* prey upon microlepidopterous larvæ.

Mr. A. H. Haliday, in Ent. Mag. vol. II, p. 219, has recorded the following observation in regard to an unknown *Bethylus*:

The insects of this genus seem fond of the flowers of *Syngenesia*, but their principal haunts are in dry sandy districts near the sea. The low tufts of *Rosa spinosissima*, flourishing among the sand cliffs, support numerous larvæ of Tineidæ, which when full fed often fall into the little pits of loose sand formed at the foot of the cliffs by the gradual scaling of the bank and the eddies of wind. These pits are com-

plete traps for various insects, to which *Myrmica rubra* and other predaceous species resort, and among these our Bethyli will be seen prowling. On the 5th of last June I observed a female of the largest size occupied with one of those larvæ which was full fed, and I should think about six times its own weight. It had seized this by the mouth, and was with great perseverance endeavoring to transport it up the sides of the pit. Perceiving that, though apparently not discouraged after ten minutes' ineffectual exertion, it had no chance of succeeding, and wishing to trace its proceedings, I placed a fragment of straw in the hollow within its reach. The moment it had touched this railway the state of affairs was changed; taking a firm hold with its hind feet, it swung its prey round and set off with it at a smart pace, walking backwards and dragging the body after it. From this time it was constantly endeavoring to ascend the face of the sand cliff, availing itself with admirable adroitness of morsels of grass, twigs, etc., embedded in it, not seeming to care how obliquely they lay, if they enabled it to gain a little elevation; so that its track was a zigzag. Frequently it chose stems, which, rising nearly erect, receded from the bank above. I first thought it was losing its labor, but it was at no loss how to act. After ascending a few inches with the whole weight suspended in the air from its mandibles, it would poise itself and its burden across the stem with its head towards the bank, then throw itself off, at the same time extending its wings, which, though incapable of raising it from the ground, were able to give it some impulse toward the bank, on which it thus alighted at a spot someway above the springing of the stem. If, on ascending one of these twigs, it discovered that it was bent the wrong way or receded too far from the cliff, it lost no time in hesitation, but, stopping short, of a sudden commenced the descent again. It may be guessed that, dragging a gross slimy body over twigs, etc., close to or half buried in the sand, frequent impediments would occur, which its extreme activity in walking indifferently sideways or backwards, and main exertion of muscular force, generally enabled it to overcome; but sometimes it had drawn its burden under or between two twigs, which arrested its course. After a violent tug or two without effect, it would retrace its steps, dragging the larva in the opposite direction till it was extricated, disposing it so as to keep clear of obstacles, and start again. On every occasion when it had left its hold it made for the same part, and spent some time in fastening its mandibles on the mouth of its prey beneath, so that the larva should be dragged on its back; once where this was not the case it was impeded by the latter grappling with its feet the twigs over which it was drawn, and its captor quickly finding the error, let go and took a new hold in the usual position.

When it ascended about two feet, it came upon a fragment of reed partly embedded in the sand, the stem of which was broken off and open below, a few dry elastic shreds of the leaf only remaining. Having reached the part where these grew, it by a strong pull drew its burden about half through, till its body was grasped between two of these as in a vice; then letting go, it began to explore the bank on each side to some distance, tapping with its antennæ the conspicuous objects. In a few minutes, seeming to be satisfied, it hastily descended the reed, and entered its stem at the lower end; it did not remain long in the interior, and on its reappearance set off for the spot where it had left the larva, which, after pulling it out of the holdfast, it seized by the mouth as usual and began to descend the reed again; it did not complete the journey this time, but taking advantage of the same kind of security to detain its prey, it repeated the reconnaissance, then returning, dragged it to the opening, and leaving it there plunged in itself, but immediately reappearing drew in the larva head foremost, speedily disappearing in the interior; so that I could not observe its subsequent proceedings, and being obliged to turn homewards, I left them undisturbed. I think, however, it will seem probable that the bore of the reed was employed instead of an artificial funnel for the cells which should contain the progeny of the Bethylus, with its store of provision.

Mesonotal furrows wanting or indistinct.

Antennæ 13-jointed.

Mandibles long, slender, bifid APENESIA Westw.

Mandibles broad, 4- to 6-dentate.

Scutellum with a transverse fovea at base (EPYRIS)

Scutellum with 2 foveæ at base (MESITIUS)

Antennæ 12-jointed.

Eyes hairy ANOXUS Thoms.

6. Antennæ 12-jointed PERISEMUS Förster

Antennæ 13-jointed GOMIOZUS Förster

PRISTOCERA Klug.

Weber u. Mohr. Beitr. Naturk. II, p. 202-6, pl. iv (1810), Westw. Thes. Ent. Oxon, p. 162 (1874).

(Type *P. depressa* Fabr.)

Head, in ♂ oblong-oval, convex with 3 ocelli; in ♀ large, oblong quadrate, the ocelli wanting; the eyes very small.

Antennæ in both sexes 13-jointed, in ♂ long, tapering toward tips; the scape stout, curved, punctate, the pedicel minute; the flagellar joints are filiform or subfiliform, truncate at tips, three or four times longer than thick, hairy or pubescent; in ♀ much shorter, submoniliform, the last joint somewhat longer than the penultimate.

Maxillary palpi 6-jointed, long; labial palpi 3-jointed.

Mandibles in ♂ dilated at apex and crossing each other, 5-dentate, teeth acute, conical, the outer tooth large; in ♀ stout, curved, the apex 3- or 4-dentate, the outer tooth large, obtuse.

Thorax: Prothorax in ♂ triangular, anteriorly subtruncate, deeply transversely impressed; mesonotum with 2 to 4 distinct furrows; metathorax convexly rounded posteriorly; in ♀ the prothorax is subquadrate, rounded anteriorly; mesothorax convexly rounded, with an impressed line on each side; the scutellum present; metathorax usually more or less strongly contracted at sides towards the base.

Front wings in ♂ with an oblong or oval stigma, an incomplete marginal, two basal, and one or two discoidal cells; and sometimes by holding the wing up to the light other cells may be seen; the second basal cell is a little longer than the first along the median nervure. The ♀ is always wingless and very much smaller than the ♂.

Abdomen in the ♂ ovate, depressed, subpetiolated, the second and third segments longer than the others; in ♀, it is variable, usually greatly elongated, pointed at apex.

Legs in ♂ rather long and not nearly so much swollen as in *Epyris*, *Mesitius*, etc.; the anterior femora a little thicker than the posterior, the anterior and middle tibiæ shorter than their femora, armed with rigid bristles anteriorly; tibial spurs 1, 2, 2, the outer spur of hind tibiæ very long, the claws long curved, with a tooth within near base; in ♀ shorter, stouter, the tibiæ outwardly spinulose, the claws simple, not toothed.

A well-defined genus, but the males easily confused with *Epyris*. The more strongly developed venation, the distinct, rhomboidal discoidal cell, the transverse medial nervure being always oblique and not so much curved as in *Epyris*; the 4 distinct mesonotal grooves, coarser sculpture, and the less distinctly swollen femora will, however, readily distinguish the genus. The females have frequently been mistaken for those of other genera, but the characters given in the table readily separate them. Many species described under the genus *Scleroderma* belong here.

Mocsary's work "*Magyar Fauna, etc.*," in which this genus is placed with the Sapygidæ as a subfamily *Pristocerinae*, I have not been able to see.

The species in the United States are not numerous, but two being known to me, separated as follows:

Females wingless 2
Males winged.

Black; the head coarsely rugose, with large punctures.

Large, 10-11^{mm}.; flagellar joints at apex more or less serrate... P. ATRA Klug

Moderate, 7-8^{mm}.; flagellar joints at apex not serrate..... P. ARMIFERA Say

2. Large, 7 to 8^{mm}. Rufo-piceous, the abdomen paler, the head and thorax with coarse scattered punctures.

Mandibles 4-dentate..... P. ATRA Klug

Smaller, 4^{mm}. Rufo-piceous, the abdomen darker, smooth, shining, impunctured.

Mandibles 3-dentate..... P. ARMIFERA Say

Pristocera atra Klug.

(Pl. II, Figs. 1, ♂; 2, ♀.)

Web. u. Mohr Beitr. zur Natur II, 202, ♂; Westw. Thes. Ent. Oxon., p. 163, pl. XXXI, f. 5; Cress. Syn. Hym., p. 247.

Scleroderma thoracica Westw., Trans. Ent. Soc. Lond., II, p. 167, ♀; Cress. l. c.

♂.—Length 10 to 11^{mm}. Black, shining, punctate, sparsely covered with a white pile. Head quadrate, coarsely reticulately punctate. Mandibles black. Palpi piceous. Antennæ 13-jointed, very long, longer than the head and thorax together, tapering toward tips, the flagellar joints about four times as long as thick, truncate at tips and slightly produced toward one side, appearing somewhat serrate. Collar rather short, rounded before, rugose and hairy. Mesonotum smooth, with some scattered punctures and 4 parallel grooved lines. Metathorax rugose, with raised lines and a slight median carina; the raised lines at base are short, longitudinally directed, those beyond transverse and irregular. Abdomen ovate, depressed, subpetiolate, highly polished, black, shorter than the thorax, and with a deep longitudinal furrow at base. Wings fusco-hyaline, the costa and stigma black, the other nervures brown; the stigma is somewhat ovate, the second basal cell (submedian) is a little longer than the first, the first discoidal cell distinct, while two other discoidal cells are plainly discernible by water-colored nervures.

♀.—Length 8 to 9^{mm}. Rufo-piceous, the abdomen paler; head and thorax with some scattered punctures: mandibles 4-dentate; palpi pale. The prothorax is one and a half times as long as wide, the sides impressed; scutellum flat, rounded; metathorax elongate, laterally toward base very strongly contracted, so that the base is not half the width of the apex. Legs brownish yellow, the tibiae strongly spinulose. Abdomen elongate, ovate.

HABITAT.—Georgia, Florida, Texas, Mississippi, and Maryland.

Types in Berlin Museum.

The types of this species I have seen in Berlin. Westwood's type of *Scleroderma thoracica* is labeled "Carolina, Zimmermann" while it is accompanied by another specimen bearing label "Baltimore, Md." Klug's type of *Pristocera atra* is in good condition. As suggested by Prof. Westwood, these insects are sexes of a single species. It is the largest species known, and the male might easily be mistaken for a Tiphid. My collection contains specimens compared with the types in Berlin. I have seen specimens from various parts of the country, the ♂ not being rare. The ♀ is extremely rare. The National Museum contains a single ♀ specimen collected by Mr. E. A. Schwarz, under bark, at Jackson, Miss., February 2, 1879.

Pristocera armifera Say.

Bethylus armiferus Say; Lec. Ed. Say, i, p. 383, ♂.

Epyris laviventris Cr.; Trans. Am. Ent. Soc., iv, p. 193, ♂; Ashm. Ent. Am., iii, p. 76; Cress. Syn. Hym., p. 247.

Scleroderma contracta Westw.; Trans. Ent. Soc. Lond., ii, p. 169, pl. 15, f. 11. ♀

♂.—Length 7 to 8^{mm}. Black, shining, covered with a sparse, glittering white pile; head quadrate, rugose, with dense coarse punctures; mandibles rufo-piceous; palpi rufous. Antennæ 13-jointed, setaceous, long, covered with a fine sericeous pubescence, the basal flagellar joints about three times as long as thick, toward the apex the joints relatively longer on account of the antennæ tapering off at apex. Pronotum rugose; mesonotum smoother, with sparse deep punctures and 4 grooved lines; scutellum polished, with few punctures; metathorax longer than wide, abruptly truncate at tip, transversely rugulose; pleura coarsely punctured. Legs black, tarsi rufo-piceous. Wings sub-fuscous, the venation similar to *P. atra*, but without the water-colored nervures.

♀.—Length 4^{mm}. Reddish piceous, smooth, shining, impunctured; abdomen darker, the apical margins of the segments pale; antennæ and tarsi, yellowish; mandibles 3-dentate. Antennæ 13-jointed, the pedicel more than twice longer than the first flagellar joint, the following joints to the thirteenth not longer than wide, the thirteenth twice longer than wide. The apical margins of the third, fourth, fifth, and sixth abdominal segments are roundedly emarginated.

HABITAT.—United States.

TYPE: ♀ in Berlin Museum; ♂ in National Museum and Coll. American Ent. Soc.

The type of *Scleroderma contracta* Westw. I have seen in the Berlin Museum; it has 3-dentate and not 4-dentate mandibles, as described by Westwood.

The species is widely distributed over the United States, but the ♀ is rare. Specimens are in my collection from Florida and Iowa, while the National Museum and the American Entomological Society have specimens from Texas, Georgia, Virginia, Maryland, and other States.

ISOBRACHIUM Förster.

Hym. Stud., II, p. 96 (1856).

(Type I. (*Omalus*) *fuscicornis* Nees.)

Head in ♀ much elongated, more rounded in ♂, the cheeks posteriorly delicately margined; eyes in ♀ wanting or very minute, in ♂ rather large, reaching to the base of the mandibles; ocelli absent in ♀, present in the ♂.

Antennæ 13-jointed, filiform, inserted in a clypeal fovea, the scape curved.

Maxillary palpi 6-jointed; labial palpi 4-jointed.

Mandibles broadened and truncate at apex, in ♂ with an acute outer tooth and with usually 4 small blunt dentations within; in ♀ with 3 teeth, the outer two most frequently equal.

Thorax in ♂ similar to *Epyris*, the prothorax rounded anteriorly, the mesonotal furrows rarely complete, most frequently indicated only anteriorly, sometimes entirely wanting; there is also a distinct groove on the shoulders; metathorax long; in the ♀ the thorax between the meso- and metathorax is strongly constricted and the scutellum is wanting.

Front wings in ♂ very similar to *Epyris*, only the stigma is smaller, more quadrate, the transverse median nervure usually more oblique, not so distinctly curved, while the discoidal nervure is present and the second discoidal cell is more or less present; the ♀ is always apterous.

Abdomen ovate, depressed, the segments unequal; in ♀ elongate, conic-ovate.

Legs as in *Pristocera*, not much thickened in the ♂; tarsi longer than their tibiæ, the basal joint of posterior tarsi as long as the remaining joints united; in the ♀ the middle tibiæ are spinous.

This genus bears a superficial resemblance in the male sex to both *Mesitius* and *Epyris*, but the much slenderer legs, eyes extending to base of mandibles, and the 4-jointed labial palpi readily distinguish it from those genera. The female comes nearest to *Pristocera*, but the absence of a scutellum and the strongly constricted metathorax sufficiently separate it from it and other wingless forms.

In stating this genus to be synonymous with *Mesitius* Spinola and *Heterocælia* Dahlbom, Prof. Westwood erred and added not a little to the confusion respecting it, as all these genera are quite distinct. *Heterocælia* is, as Dahlbom indicated, a genus in the family *Chrysididae*, while *Mesitius* is a genus allied to *Epyris*. For an explanation of this statement see my remarks under the genus *Mesitius*.

The genus is found associated with various ants; it may be parasitic upon the ants, or upon the myrmecophilous Coleoptera so frequently found in their nests.

Our species may be recognized by the aid of the following table:

TABLE OF SPECIES.

MALES.

Mesonotum without furrows.....	3
Mesonotum with furrows.....	
Transverse median nervure interstitial.....	2
Transverse median nervure everted.	
Antennæ and legs pale ferruginous.....	I. MAGNUM sp. nov.
2. Wings subhyaline.	
Abdomen piceous, paler at sutures, rufescent beneath.	
Antennæ and legs pale ferruginous or brownish yellow.	
Mandibles with small teeth within.....	I. MYRMECOPHILUM, sp. nov.
Mandibles very large and broad without teeth within.	
	I. MANDIBULARE, Ashm.
Wings hyaline.	
Abdomen rufous, sometimes more or less piceous toward base above.	
Antennæ and legs pale ferruginous.	
Abdomen not longer than the thorax.....	I. RUFIVENTRE, sp. nov.
Abdomen brownish-yellow.	
Abdomen elongate, much longer than head and thorax together.	
	I. MONTANUM sp. nov.
3. Wings subhyaline.	
Black; legs pale ferruginous, the femora obfuscated above.	
	I. FLORIDANUM Ashm.

FEMALES.

Head black, with large punctures.	
Thorax dark brown, or mahogany.	
Abdomen not longer than the thorax, rufo-piceous....	I. MYRMECOPHILUM
Thorax rufous.	
Abdomen brownish-yellow, much longer than the head and thorax united.	
	I. MONTANUM
Head piceous.	
Thorax rufopiceous.	
Abdomen brownish-yellow, longer than the head and thorax together.	
	I. MANDIBULARE

Isobrachium magnum sp. nov.

♂.—Length nearly 5^{mm}. Black, punctate; head a little longer than wide, rather strongly punctate, the surface alutaceous. Antennæ 13-jointed, brownish-yellow, the flagellar joints from 2 to 2½ times as long

as thick, the last joint twice as long as the penultimate. Thorax anteriorly narrowed, the collar brownish, the mesonotum with 4 grooves, the middle furrows more or less indistinct and abbreviated posteriorly, the scutellum with a transverse furrow at base, the metathorax twice as long as wide, rugulose, with a median carina. Wings subhyaline, the stigma and nervures pale brownish-yellow, the transverse median nervure everted. Legs brownish-yellow, the posterior coxæ somewhat dusky. Abdomen oval, piceous-black, the apical edges of the segments testaceous.

HABITAT.—Spokane Falls, Wash.

Type ♂ in Coll. Ashmead.

The largest species in the genus known to me, and readily distinguished by the everted transverse median nervure.

Isobrachium myrmecophilum sp. nov.

(Pl. II, Figs. 3, ♂; 4, ♀.)

♀.—Length 3^{mm}. Head twice as long as wide, black or piceous, shining, punctate, and sparsely covered with a dusky pubescence. Eyes and ocelli entirely wanting. Mandibles rufous, with 3 teeth. Antennæ short, 13-jointed, rufous, the scape nearly one-half as long as the flagellum; pedicel small, rounded; the flagellar joints, except the last, all transverse, the last oblong, more than twice as long as the preceding. Thorax brownish-piceous, highly polished, with a few scattered punctures; the prothorax is greatly elongate, 2½ times as long as wide, with nearly parallel sides rounded off anteriorly, the anterior depression of the collar pale rufous, finely transversely aciculate; prosternum black; mesonotum separated from the pronotum by a distinct furrow; the mesothorax is separated from the metathorax by a strong constriction, trilobed but without a scutellum; the metathorax is scarcely larger than the middle mesothoracic lobe. Legs pale brownish-yellow, stout, the middle tibiæ strongly spinous; all tarsi longer than their tibiæ. Abdomen oblong oval, brownish-piceous, much shorter than the thorax, smooth, impunctured, sparsely pilose.

♂.—Length 3 to 3.5^{mm}. Black, punctate; head oblong, with a thimble-like punctuation, mandibles rufous, antennæ and legs pale brownish-yellow, collar pale anteriorly; abdomen piceous, paler at sutures.

Antennæ 13-jointed, extending to base of scutellum, the flagellar joints not quite twice as long as thick. Thorax with 4 grooved lines, the middle pair parallel, abbreviated posteriorly; those on the shoulder abbreviated anteriorly. Metathorax long, minutely shagreened with a central longitudinal carina. Wings hyaline, the stigma and subcostal nervure pale brownish, the other nervures subhyaline; the radius is very long, almost reaching to the apex of the wing, the transverse median nervure, oblique, interstitial with the basal.

HABITAT.—Pennsylvania, District of Columbia, Montana, and Arizona.

Types in Coll. Ashmead.

This species has been taken from the nests of the ant *Formica rufibarbis* by H. G. Hubbard, at Ft. Assiniboine, Mont., and is also associated with ants under stones, at Washington, D. C., and at Beatty, Pa.

Isobrachium mandibulare sp. nov.

♀.—Length, 3.5^{mm}. Closely allied to *I. rufiventre* and closely resembling it: Head brown, not so distinctly punctate, the outer tooth of mandibles longer, the inner tooth subobsolete; eyes entirely wanting; legs yellow, the anterior tibiae at base dusky; middle tibiae strongly spinous. The abdomen is long and measures 2^{mm}; it is brownish-yellow, except the short petiole, which is black. The 13-jointed antennae are nearly twice the length of the oblong head; scape half the length of the head, much narrowed at base; last flagellar joint twice as long as the penultimate, rounded at tip.

♂.—Length 3.6^{mm}. Black and agreeing in color and structure with *I. myrmecophilum*, except as follows: The head is a little broader; the antennae a little stouter and shorter, the flagellar joints scarcely 1½ times as long as thick; mandibles very large and broad, brownish-yellow; there are no teeth within after the second tooth which is small, while the dorsum of the metathorax, except at base, is smooth and shining.

HABITAT.—District of Columbia and Fort George, Fla.

Types in Coll. Ashmead.

Both sexes of this species were taken together in the nests of *Camponotus pennsylvanicus*, May 27, 1883, by Mr. Theo. Pergande.

Isobrachium rufiventre sp. nov.

♀.—Length, 3.5 to 4^{mm}. Head variable, from piceous to black, about twice as long as wide, with scattered punctures; eyes wanting; thorax brown; antennae, legs, and abdomen brownish-yellow. The mandibles are large, crossing each other at tips, and terminate in 3 black teeth, the two outer large, equal, the inner one small. Antennae 13-jointed, 1½ times as long as the head; scape stout, not quite half as long as the head; pedicel a little longer and stouter than the first flagellar joint, the following joints to the last, wider than long, the last conic. Prothorax narrower but longer than the mesothorax, rounded before, more than twice as long as wide, separated from the mesonotum by a deep groove; mesothorax subcordate, as wide as long, trilobed, without a scutellum, the lateral lobes obcordate. Middle coxae, much larger than either the front or hind coxae, pilose beneath, the tibiae spinous; anterior tibiae with only a few spines. Abdomen long, pointed at apex, about 1.6^{mm} in length.

♂.—Length, 3.6 to 4^{mm}. Head and thorax black, shining, sparsely punctuate, the posterior margin of collar tinged with rufous. Antennae and mandibles pale rufous; legs, including coxae, pallid or whitish.

Abdomen entirely rufous. Wings salty white, the stigma and nervures hyaline.

HABITAT.—Yuma, Ariz., Montana, Texas, and Virginia.

Types in Coll. Ashmead, National Museum, and American Entomological Society.

The males of this species are common, the females rare.

Both sexes were taken together under stones near an ant's nest, by Mr. Pergande, August 5, 1885, at Occoquan Falls, Virginia, and a single ♀ was taken from the nest of *Formica obscuripes* at Helena, Mont., by Titus Ulke.

Isobrachium montanum sp. nov.

♀.—Length, 5 mm. Head oblong, twice as long as wide, piceous black, punctate, very faintly pubescent. Eyes and ocelli wanting. Mandibles rufous ending in 2 black teeth. Antennæ 13-jointed, brownish-yellow, the scape less than half the length of the flagellum; pedicel longer than the first funicular joint; flagellar joints, except the first and last, a little wider than long, the last joint oblong. Abdomen much longer than the head and thorax united, pale brownish-yellow.

♂.—Length, 4 mm. Head and thorax black, the collar pale; antennæ, mandibles, legs, and abdomen brownish-yellow; wings salty white. The thorax is smooth, impunctured, while the middle grooves of the mesonotum are only slightly indicated anteriorly. Metathorax long, smooth, impunctate, the central carina abbreviated. Abdomen longer than the head and thorax together.

HABITAT.—Montana and Arizona.

Types in Coll. Ashmead.

The ♀ of this species was taken from the nests of *Formica rufibarbis* by H. G. Hubbard at Helena, Mont., while the male, here associated with it, was obtained from a collection in Arizona; still the structure and color of the abdomen are so similar that there is no doubt left in my mind that they are sexes of the same species.

Isobrachium floridanum Ashm.

Ent. Am., III, p. 76; Cress. Syn. Hym., p. 247.

♂.—Length, 2.5 mm. Black, subopaque, finely punctate and sparsely covered with a whitish pubescence. Head oblong, closely punctate; eyes pubescent, mandibles long, crossing each other at tips. Antennæ 13-jointed, ferruginous, covered with a dense pubescence; scape clavate, about half the length of the head; pedicel not longer than wide at tip, narrowed at base; first flagellar joint a little shorter, the joints beyond longer. Prothorax trapezoidal, longer than wide across the base; mesonotum very short without furrows; scutellum with a transverse impressed line at base; metathorax quadrate with numerous longitudinal raised lines at base. Wings fusco-hyaline, the nervures brown;

stigma small. Legs pale ferruginous, the femora with a dusky streak above. Abdomen black, highly polished, oval, shorter than the thorax.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Distinguished at once by the absence of the mesonotal furrows and the longer and different shape of the prothorax. It is scarcely congeneric with the others; but as I have but a single specimen and the mouth parts can not be examined I must be content to allow it to remain here for the present. In general appearance it closely resembles the ♂ in *Mesitius*.

SCLERODERMA Latreille.

Gen. Crust. et Ins., IV, p. 119 (1809); Westw. Trans. Ent. Loc. Lond., II, p. 164 (1839) and 1881, p. 17; Thes. Ent. Oxon., p. 169.

Sclerochroa Förster Hym. Stud., II, p. 168 (1856).

Head large, subquadrate, above convex; eyes in ♀ small, the ocelli wanting; in ♂, eyes and ocelli normal.

Antennæ 13-jointed, longer in the ♂, shorter and more incrassated in the ♀.

Maxillary palpi short, 5-jointed, the apical joints slender; labial palpi 3-jointed.

Mandibles small, obtuse at apex, 4-dentate.

Thorax elongate, the prothorax large, triangular or semiovate; mesonotum scutelliform; metathorax oblong, in ♀ narrowed basally.

Front wings in ♂ without a stigma or stigmal vein, and with only 2 short basal cells, the other cells entirely obliterated; ♀ apterous.

Abdomen in ♂ ovate, in ♀ greatly elongated, cylindrical and pointed at apex.

Legs short, thick, the femora much swollen, tibial spurs 1, 2, 2; claws simple.

The characters of the male sufficiently separate this genus from other forms, but to distinguish the females from those in closely allied genera is quite difficult. I am convinced that many females described under this genus, by European authorities, do not properly belong in it, but will be found to belong to other genera, *i. e.*, *Pristocera*, *Isobrachium*, and *Dissomphalus*, as the mouth parts can not always be satisfactorily examined.

Only a single species is known in our fauna, as follows:

Scleroderma macrogaster Ashm.

(Pl. II, Fig. 6, ♀.)

Sclerochroa macrogaster Ashm. Ent. Am., III, p. 75, ♀; Cress. Syn. Hym., p. 247.

♀.—Length, 3^{mm}. Head oblong-quadrate, black, polished; thorax and legs rufo-piceous, the knees and tarsi, honey-yellow; metathorax honey-yellow; abdomen black. Antennæ 13-jointed, honey-yellow, one-fourth longer than the head, the scape about one-third the length of

the flagellum, curved, narrowed at the base, the joints of the flagellum not longer than thick. Abdomen elongate, pointed-ovate, two and a half times longer than the thorax, black, highly polished, with a few hairs at tip, the first and third segments about equal, the second slightly shorter.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

DISSOMPHALUS Ashmead gen. nov.

(Type *D. zanthopus*.)

Head in ♂ oval, very little longer than wide, with a long frontal carina; eyes oblong-oval, extending to base of mandible, nearly bare, or with few bristles; ocelli 3, distinct; in ♀ head oblong; eyes small oval; ocelli wanting.

Antennæ inserted rather far apart, 13-jointed, filiform, submoniliform, the first flagellar joint always smaller than the second.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles not very broad at tips, truncate, with 4 teeth.

Thorax in ♂ subovate, the prothorax not very long, constricted into a collar anteriorly, the pronotum usually very short; mesonotum with or without furrows; scutellum with a transverse impressed line at base; metathorax subquadrate, truncate behind but the angles rounded; in ♀ with the prothorax long, narrowed anteriorly; scutellum distinct; metathorax quadrate, very slightly contracted at base.

Front wings in ♂ with two basal cells of an equal length, the transverse medial nervure being straight, an oblong-quadrate stigma and a long stigmal vein; ♀ always apterous.

Legs in ♂ slender, the femora not much swollen; tibial spurs 1, 2, 2; tarsi a little longer than the tibiæ, the basal joint nearly as long as the remaining joints united; in ♀ with the femora swollen, the tibiæ not spinous.

Abdomen in ♂ oval or rotund, depressed, subpetiolate, the second body segment always the longest and with two very small, round, wart-like tubercles, usually covered with short hairs, sometimes placed in a fovea or depression and variously situated, being sometimes close together or widely separated; in ♀ long, cylindric-ovate, the apical margins of segments 3 to 5 more or less emarginate or sinuate.

This new genus can always be distinguished in the male sex by the two minute wart-like, pubescent tubercles on the second abdominal segment and by the straight transverse median nervure; otherwise it bears a close resemblance to *Isobrachium*. It agrees with that genus, in having the eyes extending close to the mandibles, in its mesonotal characters, and in having (comparatively) slender legs; but besides the differences already mentioned, which are sufficient to distinguish

it, it differs in the more slender, 4-dentate mandibles, in having 4-jointed maxillary palpi, and a shorter metathorax.

The female resembles *Pristocera* and *Scleroderma*, but the maxillary palpi are 4-, the labial 3-jointed, the scutellum distinct, while the metathorax is quadrate, not or scarcely contracted at base, the middle tibiae not spinous.

Four species are known to me in the male sex from St. Vincent, West Indies, and two from the United States.

The species in our fauna may be distinguished as follows:

Wingless ♀ 2

Winged ♂.

Mesonotum with 2 distinct furrows.

Legs, including coxæ, yellow; head opaque, finely, densely punctulate, with no frontal furrow *D. XANTHOPUS* sp. nov.

Legs yellow, the hind coxæ black or black basally; head shining, feebly punctulate, with a frontal furrow *D. CALIFORNICUS* sp. nov.

2. Abdomen black.

Thorax, legs and antennæ testaceous; head rufo-testaceous *D. XANTHOPUS*

Thorax, legs, and antennæ brownish-yellow; head blackish *D. CAROLINENSIS*

***Dissomphalus xanthopus* sp. nov.**

(Pl. II, Figs. 7, ♂; 8, ♀.)

♀. Length, 3.5^{mm}. Head rufo-testaceous; thorax, legs and antennæ flavo-testaceous; abdomen black.

Antennæ 13-jointed about the length of the head; the scape clavate, one-third the length of the head; flagellum subclavate, involuted; pedicel longer than the first flagellar joint; first flagellar joint the slenderest, a little longer than thick, narrowed basally, the following joints very gradually becoming stouter, but not, or scarcely, longer than thick.

♂. Length, 2.8^{mm}. Black; the head opaque, finely punctulate; thorax shining but still microscopically punctate, the mesonotum with two furrows and a grooved line on the shoulders; mandibles pale rufous with 4 nearly equal teeth; palpi white; legs, including the coxæ, yellow. Antennæ 13-jointed, the scape, pedicel, and first flagellar joint, yellow, remaining joints fuscous; the flagellar joints except the first, are about one and a half times as long as thick, densely pubescent, the last a little longer than the penultimate. Metathorax subquadrate, a little wider than long, almost smooth, being only slightly rugose at base and with a median carina extending to the superior edge of the truncature. Wings hyaline, the venation yellowish; the stigma is 3½ times as long as thick, a little narrowed at base and truncate at apex. Abdomen oblong-oval, not as long as the thorax, black, highly polished, the anus yellowish; the two small tubercles on the second segment are widely separated, situated at the basal angles.

HABITAT.—Arlington, Va., and Cedar Point, Md.

Type ♂ ♀ in Coll. Ashmead.

Described from 3 specimens.

Dissomphalus californicus sp. nov.

♂.—Length 3^{mm}. Black, shining; the head but feebly punctured, with a frontal depression before the front ocellus; thorax with 2 furrows; mandibles rufous; palpi whitish; legs brownish yellow; the posterior coxæ black basally; the hind femora dusky above. Antennæ 13-jointed, fuscous, the scape and pedicel yellow; the first flagellar joint very small, only half the length of the pedicel; the three or four following scarcely longer than thick; those beyond longer, all densely covered with a short pubescence. Metathorax subquadrate, dorsally, except just at tip, rugose, with a median carina. Wings hyaline, the venation pale yellowish; the stigma is thrice as long as thick, truncate at apex. Abdomen oval, scarcely half the length of the thorax, black, shining; the two small tubercles on the second segment are wide apart, placed near the basal angles.

HABITAT.—California.

Type ♂ in Coll. American Entomological Society.

Described from a single specimen.

Distinguished from *xanthopus* by the sculpture of the head, color and relative lengths of the joints of the antennæ, longer thorax, color of the hind legs, shorter, oval abdomen, and in the position of the two tubercles on the second abdominal segment.

Dissomphalus carolinensis sp. nov.

♀.—Length 2.6^{mm}. Polished, impunctate; head oblong-quadrate, piceous black; antennæ 13-jointed, not longer than the head, brownish yellow, the flagellum slightly dusky toward apex and very slightly incrassated; the scape is less than half as long as the flagellum and stouter; pedicel larger than the three following joints united, which are small and not longer than thick; the joints beyond these to the last are wider than long; the last joint longer than the penultimate. Thorax and legs brownish-yellow; the tarsi pale; metathorax quadrate, impressed laterally to the middle coxæ. Abdomen black, polished, conic-ovate, as long as the head and thorax united, the incisions pale, the apical margins of segments 3 to 6 slightly emarginate.

HABITAT.—North Carolina.

Type in Berlin Museum.

Described from a single specimen, labeled "Carolina, Zimmermann."

ATELEOPTERUS Förster.

Verh. d. Naturh. Ver. Preuss. Rheinl., 1851, p. 5, Tab. I, f. 1, alæ.

(Type *A. Försteri* Kirchner, ♂.)

Head in apterous ♀ oblong-quadrate, flattened subconvex above, the eyes small, oblong-oval, the ocelli wanting; in winged ♀ with ocelli; in ♂ shorter, the eyes large, prominent, slightly hairy.

Antennæ 13-jointed, the scape about one-third the length of the head, curved, subclavate, shorter in the ♀; pedicel small, rounded.

Maxillary palpi short, 4-jointed; labial palpi 2-jointed.

Mandibles in ♂ 4-dentate, the outer tooth acute.

Thorax elongate, the prothorax long, triangular, rounded in front; mesonotum short without furrows; scutellum rounded behind, with a transverse furrow at base; metathorax subquadrate, roundedly truncate in ♂; longer abruptly truncate posteriorly in ♀, with squared sides.

Front wings with only a single basal cell and a punctiform marginal vein; no stigmal vein, the costal cell open; ♀ sometimes apterous.

Abdomen subpetiolate, elongate, cylindrical, pointed at apex, the second and third segments the largest, the apical margins of segments 3, 4, and 5 roundedly emarginate in ♀, in ♂ straight.

Legs rather short and stout, the femora swollen, tibiæ not spinulose, the claws simple.

A genus closely allied to *Scleroderma* and the females apt to be mistaken for those of that genus; but the 4-jointed maxillary palpi and the simple, not spinous, tibiæ sufficiently distinguish them. The male is recognized at once by the single basal cell in the front wings.

Förster characterized the genus from a single male, the female being unknown to him. I have been enabled to perfect his diagnosis by the rearing of both sexes from a cluster of cocoons found in an old stump and from specimens of another species reared from the cosmopolitan beetle *Silvanus surinamensis*.

The species known to me in our fauna may be tabulated as follows:

TABLE OF SPECIES.

Wingless ♀	2
Winged ♂ and ♀.	
Black.	
Wings dusky; legs brownish yellow	<i>A. NUBILIPENNIS</i> , Ashm.
Wings hyaline.	
Legs rufo-piceous; sutures of abdominal segments rufous	
.....	<i>A. VIRGINIENSIS</i> sp. nov.
Legs black or piceous black; tarsi honey yellow; sutures of abdomen not rufous	<i>A. TARSALIS</i> sp. nov.
2 Head and thorax rufo-piceous; abdomen longer than the head and thorax united, black, the tip rufous.	
Antennæ and legs brownish-yellow	<i>A. VIRGINIENSIS</i> , sp. nov.

Ateleopterus nubilipennis Ashm.

Ent. Am., III, p. 97 ♂ nec ♀; Cress. Syn. Hym. p. 312.

♂. Length 3^{mm}. Black, shining; very faintly closely punctulate, but with a few coarser scattered punctures over the surface and sparsely covered with a black pubescence. Antennæ 13-jointed, the scape brownish yellow, the flagellum fuscous; the scape is one-third

the length of the head, clavate, a little bent; the pedicel small; the flagellar joints a little longer than thick. Prothorax a little longer than its width at base, rounded before. Mesonotum short, transverse; scutellum subconvex, with a transverse impressed line at base. Metathorax a little longer than wide, finely rugulose. Wings dark fuscous. Legs brownish yellow. Abdomen black, shining, as long as the head and thorax together, with sparse long hairs, thicker at the pointed apex.

HABITAT.—Jacksonville, Fla.

Type ♂ in Coll. Ashmead.

Ateleopterus virginianensis sp. nov.

(Pl. III, Figs. 1, ♂; 2, ♀.)

♂. Length 1.75^{mm}. Black, smooth, shining, varied with rufous or piceous. Antennæ 13-jointed, pale brown or yellowish; the scape one-third the length of the head.

Prothorax long, narrowed in front twice the length of the width at base. Metathorax a little more than twice as long as wide.

Wings hyaline, the veins of the single basal cell pale brownish-yellow. Legs rufous, the femora sometimes dusky above. Abdomen black, the sutures tinged with rufous; sometimes the rufous color extending on to the segments; the posterior margin of the second and third segments emarginate at the middle.

♀. Length 2.2^{mm}. Head and thorax rufous; abdomen piceous-black, the pointed tip rufous, the sutures pale, the posterior margin of the third, fourth, and fifth segments emarginate.

HABITAT.—Arlington, Va.

Types ♂ and ♀ in Coll. Ashmead.

Described from several specimens in both sexes, reared from a cluster of cocoons taken under the bark of an old stump and which have enabled me to complete the generic diagnosis.

Ateleopterus tarsalis, sp. nov.

♀. Length, 1.8^{mm}. Black, polished, impunctate; antennæ dark brown; legs piceous to black, articulations somewhat reddish; tarsi honey-yellow. The head is oblong, a little longer than wide, squarely truncate at base and apex, the sides convex; eyes rather large, oblong oval; antennæ 13-jointed, the scape clavate not quite one-half the length of the head; pedicel $1\frac{1}{2}$ times as long as thick, and much larger than any of the following joints, the flagellar joints closely united, wider than long. Pronotum a little longer than wide, narrower than the head and longer than the mesonotum and scutellum united; mesonotum about half as long as the scutellum, smooth without furrows; scutellum with 2 foveæ at base; metanotum long, quadrate, with the sides margined and a central carina. Wings hyaline, the venation brownish. Abdomen conic-ovate, much wider than the thorax, but

not or scarcely longer, perfectly smooth and shiny, with a fine sparse pubescence.

The ♂ measures scarcely 1.5^{mm}, and differs from the ♀ as follows: The head is more rounded; the flagellar joints are a little longer than wide, while the abdomen is shorter and more nearly oval, or short ovate.

HABITAT.—Washington, D. C., and Lafayette, Ind.

Types in Coll. Ashmead.

I first reared this species from raisins infested with *Silvanus surinamensis* and other Coleoptera; subsequently Prof. F. M. Webster sent me several specimens which he reared in Indiana from *Silvanus surinamensis* infesting stored grain. It comes quite close to *A. Försteri* Kirch., of Europe, but differs in being perfectly smooth, impunctured.

APENESIA Westwood.

Thes. Ent. Ox., p. 170. Trans. Ent. Soc. Lond., 1881, p. 130.

(Type *A. amazonica* Westw.)

(Pl. III, Fig. 4, ♀.)

Head large oblong or subquadrate, flattened; eyes in ♀ minute and composed of only a few hexagons; ocelli wanting; clypeus anteriorly trituberculated; in the ♂ the eyes are normal and the ocelli are present.

Antennæ 13-jointed, short, the first joint long, the second a little longer than the third, the following short; in the ♂ the flagellar joints after the second are a little longer.

Maxillary palpi deformed, 4-jointed; labial palpi 3-jointed.

Mandibles slender, curved, armed at apex with two large teeth.

Thorax in ♀ elongate, the prothorax large, suboval; mesothorax short, the dorsum subcordate; metathorax oblong, contracted near the base, the angles rounded; in ♂ elongate, the pronotum very long, narrowed anteriorly, the mesonotum with one distinct furrow, the metathorax quadrate.

Wings in ♂ similar to *Epyris*, the stigma very minute, the radius very long and slender.

Abdomen in ♀ elongate oval, in ♂ ovate.

Legs in ♀ short, thick, fossorial, middle tibiæ compressed and spinous, the anterior tibiæ terminating in two spurs and the basal joint of the tarsus is lunate and armed on the under side with a row of very fine short bristles; the middle legs, on the contrary, are very robust, the tibiæ strongly serrated on the outer margin and the spurs finely spined; in the middle legs the tarsi are longer than the tibiæ and have the under side of the three basal joints finely spined.

The slender, bidentate mandibles and 4-jointed deformed maxillary palpi, sufficiently distinguish the female of this genus from other wingless genera. The male, which is here described for the first time, comes nearer to the genus *Dissomphalus* than to any other, but the mandibles

are longer and more slender, bidentate and cross each other at tips; the head is quite differently shaped, being much longer, a little wider anteriorly than posteriorly; the pronotum wholly different; the mesonotum much shorter and without furrows; the abdominal segments similar, but without the warty-like tubercles on the second segment; while the venation of the wing is quite different, the stigma being minute, the radius very long and slender, the basal cells slightly subequal in length.

Apenesia coronata, sp. nov.

(Pl. III, Fig. 3, ♂.)

♂. Length, 3^{mm}. Black, shining, alutaceous; mandibles long, slender, crossing each other at tips, bidentate, rufous; antennæ 13-jointed brown; pedicel longer than the first flagellar joint, joints 1 and 2 of flagellum equal, a little longer than thick, joint 3 a little longer, those beyond somewhat longer than the third; head nearly twice as long as wide, a little wider before than behind, the vertex with several blister-like elevations. Thorax smooth, without furrows, the pronotum nearly three times the length of the mesonotum, narrowed before; scutellum separated from the mesonotum by a delicate transverse furrow at base; metathorax quadrate, with a longitudinal median carina. Wings hyaline, the venation pale brownish, the stigma minute, the stigmal nervure very long and slender; basal cells two, nearly equal. Legs black, the tibiæ, except at tips, piceous, tips of tibiæ and tarsi pale or whitish. Abdomen ovate, depressed, polished black, about as long as the thorax.

HABITAT.—Bladensburg, Md.

Type in Coll. Ashmead.

For the single specimen of this rare insect, the first male to be described in the genus and the first species to be detected in the United States, I am indebted to my friend Mr. E. A. Schwarz, who captured it at Bladensburg, July 20, 1890.

CEPHALONOMIA Westw.

Lond. Mag. Nat. Hist., VI, p. 420, [1833]; Syn. Holopedina, Först., Verh. naturh. Ver., preuss. Rheinl., 7. Jahrg., p. 502 (1850); Först., Hym. Stud., II, p. 125, 1856.

(Type *C. formiciformis* Westw.)

Head in ♀ large, oblong-quadrate, flattened, in ♂ more rounded; the ocelli in the winged form, in both sexes, present; in the wingless female absent.

Antennæ 12-jointed, the pedicel larger than the first flagellar joint, in ♂ filiform, nearly the length of the thorax, in ♀ not or scarcely longer than the head, submoniliform, not incrassated toward tips.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles 3-dentate.

Thorax elongate ovate, the prothorax large and triangular, narrowed

or rounded in front; mesonotum short, without furrows; scutellum with a transverse furrow at base; metathorax subquadrate, rounded behind.

Front wings with a very short submarginal vein, terminating in a callous spot and a small stigma; costal cell open; the stigmal vein and basal cells wanting. The ♀ is usually apterous without ocelli, although sometimes winged with the venation as in the male.

Abdomen ovate or oval, subpetiolate, the second and third segments large, about equal, the following short, the posterior apical margins of the segments usually straight.

Legs short, stout, the femora swollen, the anterior pair larger than the others, tibial spurs, 1, 2, 2, claws simple.

For many years the true position of this genus was obscure. Prof. Westwood in his original description stated it was allied to *Teleas*, and Förster, as late as 1856, in his *Hymenopterologische Studien*, without a personal acquaintance with it, incorporated it among the *Diapriinae*. It has been fully elucidated since, however, and properly placed by Westwood in the *Bethylinæ*, details of which will be found in the Proceedings of the London Entomological Society for 1881, p. 125.

The degraded type of venation and the absence of basal cells readily distinguish the winged form from other genera in the group; but with the apterous forms it is quite different, and great care must be taken to examine the mouth parts for the characters laid down in the table, or one is apt to confuse them with *Scleroderma*.

Only three species are known in our fauna, which may be tabulated as follows:

Winged.....	2
Wingless, without ocelli.	
Entirely brownish yellow or honey-yellow.....	<i>C. GALLICOLA</i> Ashm.
Head, thorax, and legs rufo-testaceous, the collar anteriorly and the meta-thorax waxy white.	
Abdomen black.....	<i>C. CYNIPHILA</i> Ashm.
2. Polished black; legs piceous.	
Wings hyaline.....	<i>C. HYALINIPENNIS</i> sp. nov.
Rufo-testaceous, collar and base of abdomen yellowish.	
Wings subhyaline.....	<i>C. NUBILIPENNIS</i> Ashm.

***Cephalonomia gallicola* Ashm.**

(Pl. III, Fig. 6, ♀.)

Sclerochroa gallicola Ashm., Ent. Am., III, p. 75, ♀; Cress., Syn. Hym., p. 247.

♀.—Length, 1.8^{mm}. Honey-yellow or pale brownish-yellow, smooth, polished. Eyes small, round. Antennæ 12-jointed, about as long as the head; scape one-third the length of the head; pedicel a little longer than thick; the flagellar joints all small, submoniliform. Abdomen pointed, ovate, a little longer than the head and thorax united; the apical margins of the second and third segments slightly emarginate.

HABITAT.—Jacksonville, Fla.

Type ♀ in Coll. Ashmead.

My specimens were bred from a cynipidous oak gall (*Andricus foliatus* Ashm.), and is probably parasitic on some coleopterous larva inhabiting the gall.

Cephalonomia cynipiphila Ashm.

Sclerochroa cynipsiphila Ashm., *loc. cit.*, II, p. 75; Cress., *Syn. Hym.*, p. 247.

♀.—Length, 2^{mm}. Head, thorax, and legs rufo-testaceous, the collar anteriorly and the metathorax waxy white, the abdomen black, polished. Antennæ 12-jointed, a little longer than the oblong head; scape slightly longer than one-third the length of the head, bent, narrowed at base; pedicel twice as long as thick; flagellum very slightly thickened at the middle, the first two joints very small, not longer than thick, the following wider than long.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Bred from a cynipidous oak gall (*Holcaspis omnivora* Ashm.). It is not necessarily parasitic on the cynipid, as other insects, dipterous, lepidopterous and coleopterous, were also reared from the gall.

Cephalonomia hyalinipennis, sp. nov.

(Pl. III, Fig. 5, ♂.)

♂ ♀.—Length, 1 to 1.5^{mm}. Polished black; scape and pedicel rufous; flagellum brown-black; legs piceous; wings hyaline; tegulæ rufo-piceous.

The female in this species agrees in all respects with the male except in having a much longer and broader abdomen, it being broadly ovate, fully twice as wide as the thorax, and in having a much longer head.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

The color and the female in having wings render the species easy of identification.

The ♂ was reared March, 1887, from the galls of *Amphibolips cinerea* Ashm., while the ♀ was bred April, 1887, from *Holcaspis omnivora* Ashm.; but notwithstanding they came from different galls, I believe they are sexes of one and the same species.

Mr. F. H. Chittenden has recently shown me several specimens of what is evidently this same species, reared by him from the coleopteron *Hypothenemus eruditus*, living in the dead twigs of the cultivated fig. It differs from my type in having black femora.

Cephalonomia nubilipennis Ashm.

Holopedina nubilipennis Ashm., *loc. cit.*, III, p. 97.

♂.—Length, 1.8^{mm}. Rufo-testaceous, smooth, impunctured; there is a dusky blotch across the scutellum and on the disk of the abdomen; collar and base of abdomen yellowish. The antennæ are 12-jointed, pale brown, 1½ times as long as the head; the scape a little more than one-third the length of the head, the pedicel stouter than the flagellar

joints; the flagellar joints are longer than thick, the last twice as long as thick, pubescent. Legs rufous, the femora and tibiæ, at the middle, piceous. Wings subfuscous, with only an open costal cell.

HABITAT.—Florida.

Type ♂ in Coll. Ashmead.

LÆLIUS Ashmead gen. nov.

(Type *L. trogodermatis*.)

Head oblong, nearly as wide across the eyes as long; in ♂ wider across the eyes than long; eyes large, oval, hairy; ocelli 3 in a triangle, and larger in the ♂ than in the ♀.

Antennæ 13-jointed, filiform, more than twice as long as the head in the female, and in the male much longer; the scape is about one-third the length of the head, cylindrical, very slightly bent, and a little stouter than the flagellum; the pedicel in the ♀ is a little longer and stouter than the first flagellar joint, in the ♂ slightly shorter; the second flagellar joint slightly shorter than the first.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles curved, broadened, and truncate at tips, 5-dentate, the outer tooth acute, followed by small teeth.

Thorax elongate, the prothorax very long, triangular, rounded in front; mesonotum very short, without furrows; scutellum with a transverse impressed line at base; metathorax oblong quadrate, abruptly truncate behind, finely transversely rugulose, usually with 3 delicate longitudinal carinæ.

Front wings with two distinct basal cells, about equal in length, a very short marginal and stigmal vein, and with the costal cell closed, a vein running all along the outer margin.

Abdomen subpetiolate, pointed ovate, the third segment the longest, the fourth about half the length of the third, the following short.

Legs moderate, pilose, the femora swollen, the anterior pair the stoutest, the tibiæ subclavate, tibial spurs 1, 2, 2, the tarsi longer than the tibiæ, slender, claws simple.

In venation this genus resembles *Bethylus*, but the 13-jointed antennæ and the difference in the palpi readily separate the two; while from *Ateleopterus*, which also has 13-jointed antennæ, it is at once distinguished by the two basal cells and the short but distinct stigmal vein.

Three species are known to me, which may be separated as follows:

Coxæ and femora, except tips, black.

Wings hyaline *L. TROGODERMATIS*, sp. nov.

Legs rufous or reddish-yellow.

Anterior coxæ black, the others usually dusky.

Metathorax with 3 carinæ on disk *L. TRICARINATUS*, sp. nov.

All coxæ pale.

Metathorax with 4 carinæ on disk, transversely rugulose. . . *L. RUFIPES*, sp. nov.

Metathorax with 1 carina on disk, finely punctulate. . . *L. NIGRIPILOSUS*, sp. nov.

Lælius trogodermatis, sp. nov.

♀. Length, 2.4^{mm}. Black, highly polished, impunctured, but under a high power exhibiting a fine alutaceous sculpture. Head very little longer than wide, without pubescence; a short keel between antennæ; mandibles 4-dentate, honey-yellow; palpi pale. Antennæ 13-jointed, extending to tegulæ, pale brownish; scape basally black, about as long as the pedicel and first two flagellar joints united; pedicel longer than the first flagellar joint; second flagellar joint slightly shorter than the first; those beyond nearly equal, quadrate. Thorax elongate, the pronotum three or more times as long as the mesonotum, the scutellum with a transverse impressed line at base. All coxæ black; all femora, except tips, black or piceous brown, the trochanters, tibiæ, and tarsi, honey-yellow. Wings hyaline, the venation yellowish. Abdomen a little longer than the thorax, pointed ovate, black, shining, impunctate, with sparse black hairs at apex. In the ♂ the head is slightly wider than long; the antennæ longer; the pedicel is a little shorter than the first flagellar joint, the flagellar joints, after the first, being about twice as long as wide, while the basal joint of the maxillary palpi is slightly swollen.

HABITAT.—District of Columbia (?)

Types in National Museum.

Described from 1 ♂ and 1 ♀ specimen, reared Nov. 1, 1884, from the larva of *Trogoderma tarsale* in the Belfrage collection.

Lælius tricarinatus, sp. nov.

♂ ♀. Length 2.5 to 2.9^{mm}. Black; legs, except coxæ, and antennæ, brownish-yellow. Antennæ 13-jointed, twice as long as the head, the pedicel and first flagellar joint about equal, the following shorter but still all longer than thick. Mesonotum very short, without furrows. Scutellum with a transverse fovea across the base. Metathorax longer than wide, transversely rugulose, with 3 carinæ on the disk. Wings hyaline, the venation pale yellowish; marginal and stigmal nervures very short, scarcely developed.

HABITAT.—District of Columbia and Florida.

Types in Coll. Ashmead.

This species is readily distinguished by the three longitudinal meta-thoracic carinæ and by the anterior coxæ being always black. It comes nearest to *L. nigripilosus*, and like that species is sparsely covered with long black hairs.

Lælius rufipes, sp. nov.

♀. Length 3^{mm}. Black, shining, alutaceous, sparsely pilose; antennæ 13-jointed, brown; three basal joints, mandibles, palpi, and legs rufous. Metathorax with 4 longitudinal carinæ on the disk, the surface rugulose. Abdomen pointed ovate, shorter than the thorax, polished

black, sparsely pilose. Wings hyaline or but faintly tinged, the venation pale, the marginal and stigmal nervures but slightly developed. The antennæ are rather long, the scape $2\frac{1}{2}$ times the length of the pedicel; first flagellar joint shorter than the pedicel, the joints beyond all longer than thick.

HABITAT.—Western States.

Types in National Museum and Coll. Ashmead.

***Lælius nigripilosus*, sp. nov.**

(Pl. III, Fig. 7, ♀.)

♂ ♀. Length 1.3 to 2.5^{mm}. Black, shining, faintly alutaceous, the head in the ♀ much wider than in the ♂, similar to the head in *Goniozus*. Mandibles in ♀ black, in ♂ rufous. Antennæ 13-jointed, pale brown; flagellar joints 1 to 3 nearly equal, about twice as long as thick, the following shorter; in the ♀ the flagellum is stouter and the joints shorter than in the ♂. Mesonotum with 2 delicate furrows, indistinct or wanting in the male. Scutellum with a distinct transverse furrow at base. Metathorax subquadrate, the dorsum with a single central carina and with a scaly punctuation. Wings grayish-hyaline, the nervures yellowish or pale, the marginal and radius very short, scarcely developed. Legs ferruginous or reddish-yellow. Abdomen in ♀ conic-ovate, about as long as the head and thorax united, subpetiolate; in ♂ ovate, much shorter than the thorax. Both sexes are covered with long, sparse black hairs, more apparent in the male, and denser on the head and towards apex of abdomen.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

BETHYLUS Latreille.

Hist. Nat., III, 315 (1802); Förster, Hym. Stud., II, 96 (1856).

(Type *B. cenopterus* Panz.)

Head oblong, smooth; eyes broadly oval or rounded; ocelli 3, distinct, prominent.

Antennæ 12-jointed, filiform, moniliform, or setaceous; scape very short; pedicel in ♀ a little longer than the first flagellar joint, in ♂ shorter.

Maxillary palpi 6-jointed; labial palpi 3-jointed.

Mandibles short, curved, not very broad at tips, truncate, with 3 or 4 small teeth, the outer acute.

Thorax subovate; the prothorax triangular, rounded in front; mesonotum most frequently without furrows; short, transverse; metathorax usually with delicate longitudinal keels, the apex subtruncate.

Front wings with a very small marginal vein, a short stigmal vein, and two basal cells of an equal length; no traces of other veins or cells.

Abdomen ovate, pointed at tip, the third segment the longest, the apical margins of the segments straight.

Legs short, stout, the femora much swollen, the anterior pair the

stoutest, the tarsi not or scarcely longer than the tibiæ, slender, claws simple.

This genus, the type of the subfamily, is of small extent, few species in it having been discovered either in Europe or America.

It resembles my genus *Lælius* in venation, but the 12-jointed antennæ and the 6-jointed palpi readily distinguish it.

Our species may be tabulated as follows:

TABLE OF SPECIES.

FEMALES.

Abdomen with a strong constriction between the third and fourth segments.

Legs, except coxæ, reddish-yellow *B. CONSTRICTUS*, sp. nov.

Abdomen normal.

Legs honey-yellow *B. PEDATUS*, Say.

Legs black, tibiæ and tarsi brownish, *B. CENTRATUS*, Say.

Bethylus constrictus, sp. nov.

♀. Length 3^{mm}. Black, shining, impunctured, with some sparse black hairs. Head a little longer than wide. Antennæ 12-jointed, less than twice the length of the head, brown, the pedicel very small, the flagellar joints very little longer than wide. The mesonotum shows traces of furrows posteriorly. Metathorax finely, closely punctate, subopaque, with raised longitudinal lines towards the base. Legs reddish-yellow, the coxæ black. Wings dilute fuscous, the veins brown. Abdomen black, highly polished, as long as the thorax, the petiole very short, the second and third segments long, the latter the longer, with a strong constriction between it and the fourth, the apex produced into a stylus-like point, with long, sparse black hairs.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen, which is remarkable for, and easily distinguished by, the constriction between the third and fourth abdominal segments.

Bethylus pedatus Say.

(Pl. III, Fig. 8, ♀.)

Bost. Jour., I, p. 279; Lec. Ed. Say's Works, II, p. 727; Ashm. Ent. Am., III, p. 97; Cress. Syn. Hym., p. 247.

♀. Length 2.5^{mm}. Polished black, with sparse hairs. Head hardly longer than wide. Antennæ 12-jointed, 1½ times as long as the head, honey-yellow or pale brownish-yellow, fuscous at tips; the scape is a little more than thrice as long as thick, the joints of the flagellum scarcely longer than thick. Mesonotum without furrows. Scutellum with a transverse impressed line at base. Mesonotum finely punctulate, with longitudinal raised lines or carinæ. Wings hyaline, very faintly tinged, the venation yellowish. Legs dark honey-yellow, the coxæ

dusky. Abdomen as long as the thorax, polished, terminating in a stylus-like point, with a few long hairs.

The ♂ differs only in its antennal characters and in having a broader head. The antennæ are nearly thrice as long as the head, filiform, tapering at tips, the scape shorter, the joints of the flagellum a little longer.

HABITAT.—Indiana, Florida, and Virginia.

Specimens in Coll. Ashmead.

I have had no difficulty in recognizing this and the following species of Say's from his remarks at the end of his description, as he says: "This species and the following (*B. centratus*) are remarkable for the brevity of the inflected tip of the radial nervure, which is not at all arcuated; but points obliquely inwards."

***Bethylus centratus* Say.**

Lec. Ed. Say's Works, II, p. 727; Ashm. Ent. Am., III, p. 97; Cress. Syn. Hym., p. 247.

♀. Length 3^{mm}. Polished black, with some scattered hairs. Head across the eyes fully as wide as long. Antennæ 12-jointed, brownish-piceous, the scape black, the pedicel yellowish, the joints of the flagellum a little longer than thick. Mesonotum with 2 more or less distinct furrows. Metathorax closely, finely punctured, with raised longitudinal lines. Wings subhyaline, the venation brown. Legs black, the tibiæ and tarsi brown or piceous. Abdomen ovate, scarcely as long as the thorax, polished black, with a slight projecting point at apex.

HABITAT.—Indiana, Colorado, and Florida.

Specimens in Coll. Ashmead.

***EUPSENELLA* Westwood.**

Thes. Ent. Oxon. p. 168 (1874).

(Type *E. agilis* Westw.)

(Pl. IV, Fig. 1, ♂.)

Head oblong, subconvex, broader than the thorax; clypeus angulated at the middle; eyes smooth; ocelli 3, distinct.

Antennæ 13-jointed, rather short, the scape thickened, the 12 following joints short nearly equal.

Maxillary palpi 6-jointed; labial palpi 3-jointed.

Mandibles stout, 5- or 6-dentate, the teeth obtuse.

Thorax: prothorax large, semicircular; mesonotum with 2 furrows; metathorax transverse, the posterior angles rounded, between punctured with a semicircular impression at base and a slender median carina.

Front wings with a large stigma, a complete marginal, one submarginal, two discoidal and two basal cells; the radial vein is recurved at apex and the second discoidal cell is very long, extending beyond the apex of the marginal cell.

Abdomen oblong ovate, smooth.

Legs short, the anterior femora especially stout; claws strongly curved, dilated at base.

A genus described from Australia and unknown to me. Prof. Westwood further describes the "maxillæ as minute, terminating in 3 ciliated lobes; the mentum minute; the labium minute, membranaceous, hairy." The closed marginal cell and the two discoidal cells readily distinguish the genus from all others.

SIEROLA Cameron.

Trans. Lond. Ent. Soc., 1881, p. 556

(Type *S. testaceipes* Cam.)

Head oblong.

Antennæ 13-jointed, not much longer than the head; the scape thicker than the other joints and as long as the following, the third and fourth slightly longer than the succeeding and produced beneath on the longer side; remaining joints not much longer than broad, distinctly separated from each other.

Palpi (†).

Mandibles (†).

Thorax (†).

Front wings with a stigma and a prostigma, the two being separated by a hyaline space, costa thickened in front of the stigma; radial cell completely closed; two humeral cells unequal and closed; from the upper end of the lower (and smaller) cellule there proceeds a small oval cellule, which is united to the prostigma by a short thick nervure, so that the upper humeral cellule is thus completely closed. From the end of the radial cellule runs to the edge of the wing a white spurious vein; another runs in the same direction from the small oval cellule above mentioned, the two being united by a cross nervure half-way between the radial cellule and the apex of the wing; another spurious vein runs from the lower humeral cellule to the bottom of the wing.

Abdomen longer than the head and thorax, the third and fourth segments contracted in the middle at the junction; in length subequal; the last is acuminate.

Legs as in *Perisemus*.

A genus unknown to me and not yet recognized in North America, the type, *S. testaceipes* Cameron, coming from the Sandwich Islands. The species described by me as such, *S. maculipennis*, Entomologica Americana, vol. III, p. 75, is a peculiar little braconid belonging to the subfamily *Euphorinae*, and will probably form the type of a new genus.

According to Cameron: "This genus differs from all the genera of the Bethyloïdæ in having the radial cellule completely closed and in

the presence of the small oval cellule uniting the humeral cellules. It comes nearest to *Goniozus* Förster. In the shape of the prostigma it more resembles *Perisemus*."

Cameron does not appear to be acquainted with *Eupsenella* Westw., which also has a closed radial cell and next to which I have placed it, believing it closely allied.

Since the above was written I have received from Mr. G. C. Davis, of Agricultural College, Michigan, a remarkable male Bethyloid, taken in South Dakota, that agrees with *Sierola* in having a closed marginal cell, but in other particulars differs so widely as to lead me to believe it will yet prove quite distinct and form the type of a new genus.

As Mr. Cameron, however, in his diagnosis, fails to define the palpal, mandibular, and thoracic characteristics of *Sierola*, I am unable to decide the question at present, and rather than run the risk of creating a synonymy prefer to describe it doubtfully under this genus. The front wing is represented on Pl. IV, Fig. 2.

(?) *Sierola ambigua* sp. nov.

(Pl. IV, Fig. 2, ♂.)

♂ Length about 4.5^{mm}. Black, polished, finely sericeous; sutures of trochanters, extreme tips of all femora and tibiae and tarsi, except last joint, honey-yellow; tibial spurs 1, 2, 2; claws with a small tooth at base; wings subfuscous; palpi fuscous.

The head is transverse, not quite as broad as the mesothorax between the wings; ocelli 3, triangularly arranged; eyes oblong-oval, bare, reaching not quite to the base of the mandibles; antennæ 13-jointed, filiform, extending to base of metathorax; scape subglobose, obliquely truncate at tip; pedicel small, rounded; first flagellar joint scarcely two-thirds the length of second; the second joint longer than any other except the last, the third and following to last joint very gradually shortened the last a little longer than the second. Thorax shaped much as in *Epyris*, except that the metanotum is smooth and polished instead of rugose; the pronotum is large, trapezoidal, the collar anteriorly transversely impressed; the mesoscutum with two deep parapsidal furrows, and with a longitudinal furrow on the parapsides; scutellum with a transverse furrow at base; metathorax subquadrate, the posterior angles slightly rounded, margined at sides. Wings ample, subfuscous, the venation as in figure, brown-black or fuscous; the marginal cell closed and not longer than the stigma; the second recurrent and second transverse cubital veins partially visible as hyaline lines. Abdomen lost.

HABITAT.—Brookings, S. Dak.

Type in coll. Ashmead.

Described from a single specimen kindly given me by Mr. G. C. Davis.

CALYOZA Westwood.

(Pl. IV, Fig. 3, ♂.)

Thes. Ent. Oxon., p. 156. 1874.

(Type, *C. staphylinoides* Westw.)

Head large, subconvex; eyes placed at the side of the head before the middle; ocelli distinct.

Antennæ 13-jointed, joints 2 and 3 minute, joints 4 to 12 in ♂ ramose, in ♀ simple, cylindrical.

Maxillary palpi moderately elongated, 6-jointed, joints 1 and 2 short, the 4 following longer, nearly equal and gradually more slender; maxilla small, terminating at apex in three flat, membranaceous, ciliated lobes; labial palpi short, 3-jointed; mentum subobovate.

Mandibles elongate, in ♂ broadly obliquely truncate at apex, with a large apical tooth, followed by small obtuse teeth; in ♀ with large irregular teeth, internal tooth obtuse; beneath armed with rigid bristles; the apical middle tooth large, triangular; external small, obtuse.

Thorax: Prothorax large, subtriangular, anteriorly rounded; mesothorax without furrows; metathorax longitudinally sulcate and transversely striolated.

Front wings with a large stigma, an incomplete marginal and two basal cells.

Legs of the usual form; claws acute, broad at base, and armed with a tooth at the middle.

A genus not found in America, north of Mexico, but readily known by the branched antennæ in the male.

EPYRIS Westwood.

Phil. Mag., 1832, p. 129; Hal. Ent. Mag., IV, p. 432; Först. Hym. Stud., II, p. 96; Westw. Thes. Ent. Oxon., p. 157.

(Type, *E. niger* Westw.)

Head oblong, not much longer than wide, subconvex, wider than thorax; eyes hairy; ocelli distinct.

Antennæ 13-jointed, long, slender, cylindrical, much shorter in ♀, the scape thickened and several times longer than the pedicel, the following joints short, submohiliform, nearly equal in length.

Maxillary palpi long, 6-jointed, the three basal joints thickened, the first minute, the second and third gradually longer, the last three long, slender; maxilla terminating in two oval membranaceous lobes, ciliated at apex; labial palpi 3-jointed, the joints gradually becoming longer; mentum small, somewhat broad at apex.

Mandibles falcate, the apex oblique, 5-dentate, the outer tooth large, acute.

Thorax: Prothorax triangular, the apex rounded and with a deep transverse furrow above; mesothorax trapezoidal, the mesonotum with two distinct furrows; scutellum with a transverse furrow or fovea at base; metathorax transverse or subquadrate, longitudinally carinated.

Front wings with a moderate sized stigma, an incomplete marginal and two basal cells, the discoidal cells obliterated; the basal cells are about equal in length, the first oblique at apex, the second rounded or somewhat angulate.

Abdomen ovate, subpetiolate, segments 2 and 3 the longest; the apical margins of the segments are entire.

Legs stout, the femora much swollen, especially the anterior pair, claws often with a tooth towards the base.

This genus might easily be mistaken for forms in *Calyza*, *Mesitius*, and *Isobrachium*. The much swollen fore femora separate it from *Isobrachium*; the transverse fovea or grooved line at the base of the scutellum from *Mesitius*; while the bilobed maxilla separates it from *Calyza*; but when one is in doubt, or until one becomes familiar with the habitus of the genus, the full generic description must be consulted.

It is quite well represented in our fauna and no doubt many new species will be discovered when the *Proctotrypidæ* are more carefully collected.

The species at present known to me may be thus tabulated:

TABLE OF SPECIES.

FEMALES.

- | | |
|--|---------------------------|
| Coxæ and legs rufous or pale rufous | 2 |
| Coxæ black. | |
| Legs rufous, the femora more or less fuscous or dusky. | |
| Wings subhyaline. | |
| Head and thorax æneous-black; metathorax with 5 longitudinal raised lines with transverse lines between | E. OCCIDENTALIS, sp. nov. |
| Legs and antennæ rufous. | |
| Wings subfuscous. | |
| Head and thorax opaque black, very finely, closely punctulate; metathorax with a central raised line, the surface on each side being reticulate with raised lines, ♂ | E. CARBONARIUS, sp. nov. |
| 2. Head black, not at all metallic | 3 |
| Head æneous, abdomen bluish. | |
| Wings fuscous | E. ÆNEICEPS, sp. nov. |
| 3. Front coxæ black; antennæ and legs rufous. | |
| Wings subfuscous. | |
| Metathorax with many longitudinal raised lines and irregular crosslines between; apex of abdomen rufous | E. ANALIS Cr. |
| All coxæ and legs rufous or honey-yellow. | |
| Wings subhyaline. | |
| Head not unusually large or broad. | |
| Metathorax with 6 or 8 raised longitudinal lines. | |
| Head and thorax black. | |
| Mesopleura foveated; mandibles 5-dentate | E. RUFIPES, Say. |
| Mesopleura areolated; mandibles 6-dentate | E. COLUMBIANUS, sp. nov. |
| Head and thorax with a bluish tinge, or submetallic | E. GRANDIS, Ashm. |
| Head very large and broad | E. MEGACEPHALUS, sp. nov. |

Epyris occidentalis, sp. nov.

♀. Length 5^{mm}. Æneous black, shining; head with sparse, distinct punctures; mandibles large, 5-dentate, rufous; palpi and antennæ rufous, the latter brownish toward tips. Metathorax with 5 longitudinal carinæ, the two lateral abbreviated before attaining the posterior margin, the surface between the carinæ transversely rugulose, sides finely longitudinally striate. Wings yellowish-hyaline. Legs rufous, the coxæ blackish, the anterior pair always black, anterior and posterior femora blackish or rufo-piceous.

♂. Length 4.3^{mm}. Agrees with female in color except the posterior coxæ are blackish and the antennæ are brown; structurally it differs in the long, acuminate antennæ, the joints being at least 3 times as long as thick; and in having a smaller less pointed abdomen.

HABITAT.—California.

Types in Coll. Ashmead.

Described from 1 ♂ and 1 ♀ specimen.

Epyris carbonarius, sp. nov.

(Pl. iv, Fig. 4, ♂.)

♂. Length 3.5^{mm}. Black, opaque, closely, finely punctate, sparsely covered with a glittering white pubescence. Head very large, one-fourth longer than wide. Antennæ, mandibles, palpi and legs rufous, the coxæ black. Antennæ 13-jointed, extending beyond the tegulæ; the scape curved, narrowed basally, three times as long as thick at the tip; pedicel wider than long, hardly half as long as the first flagellar joint; the first and second flagellar joints about equal, much longer than thick; remaining to the ultimate, shorter but all of about an equal length, the ultimate longer and thinner, 2½ times as long as thick. Prothorax longer than wide, laterally impressed; mesonotum broader than long, without distinct furrows, although with a strong lens faint traces of them can be discerned anteriorly; scutellum with a transverse impressed line at base; metathorax longer than broad, finely punctate, slightly rugose basally, with a trace of a median longitudinal carina. Wings fusco-hyaline, the venation brown; the stigma subquadrate, the transverse median nervure oblique, with a spurious nervure almost interstitial with the median nervure.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Epyris æneiceps, sp. nov.

♀. Length 4^{mm}. Bluish æneous; the head with a slight greenish metallic luster, sparsely punctate; mandibles, palpi, antennæ, and tegulæ, rufous; wings subfuscous; metathorax with 5 close, longitudinal carinæ on disk, interstices and laterally, transversely rugulose, the abrupt sides longitudinally striated.

HABITAT.—Fort Capron, Fla.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

Epyris analis, Cress.

Trans. Am. Ent. Soc. IV, p. 193, ♀; Ashm. Ent. Am., III, p. 76; Cress. Syn. Hym., p. 247.

♀. Length 6^{mm}. Head and thorax dark metallic green, shining, sparsely clothed with pale pubescence; head subquadrate, flattened, rather closely and finely punctured; mandibles dark ferruginous; palpi whitish; antennæ short, robust, ferruginous; pro and mesothorax sparsely and finely punctured; metathorax black, quadrate, abrupt laterally and abruptly truncate at tip, above minutely and transversely aciculated, the disk with 4 or 5 approximate longitudinal carinæ, posterior face transversely aciculated, the sides longitudinally so; tegulæ ferruginous, wings tinged with yellowish-fuscous; legs short, robust, pale ferruginous, anterior coxæ black, all the femora incrassated; abdomen elongate ovate, smooth and polished, black, immaculate, apex ferruginous.

HABITAT.—Texas.

Type in Coll. American Entomological Society.

Epyris rufipes, Say.

Bethylus rufipes Say, Lec. Ed. Say's Works I, p. 221.

Epyris rufipes Cr. Trans. Am. Ent. Soc. IV, p. 193; Ashm. Ent. Am. III, p. 76; Cr. Syn. Hym., p. 247.

♀. Length 4^{mm}. Black; head large, with sparse punctures; eyes hairy; mandibles large, broad, rufous, 6-dentate; legs and antennæ rufous, the latter a little dusky at tips.

Antennæ 13-jointed, long, the scape as long as the first three flagellar joints together; flagellum tapering off at tip, the first joint the smallest, the others all much longer than thick. Thorax coriaceous, the metathorax with longitudinal raised lines, the surface between transversely rugulose. Wings subhyaline, the nervures brownish, the radius very long. Abdomen ovate, pointed at tip, sparsely hairy, black and polished, the extreme apical edges of segments 3 to 6 rufous.

HABITAT.—Indiana and Southern States.

- Specimens in Coll. American Entomological Society and Coll. Ashmead.

Epyris columbianus, sp. nov.

♀. Length 5^{mm}. Black, shining, coriaceous; head sparsely punctate, mandibles rufous, large, 6-dentate; antennæ, except flagellum, legs and tegulæ rufous; flagellum dusky; wings subfuscous. Metathorax with 5 longitudinal carinæ on the disk, the two between the central and the outer abbreviated, the outer curving outwardly towards apex, the surface transversely rugulose.

The ♂ is only 4^{mm} in length, and agrees with the female, except that the antennæ are longer, the flagellar joints being 2½ times as long as thick, the thorax with some sparse punctures, the abdomen elongate,

the second, third, and fifth joints about equal, the fourth being only half the length of the third.

HABITAT.—Washington, D. C., and Jacksonville, Fla.

Types in Coll. Ashmead.

Distinct from *E. rufipes* Say in its larger size, darker wings and the 6-dentate mandibles.

***Epyris grandis* Ashm.**

Goniozus grandis Ashm. Ent. Am. III, p. 76; Cress. Syn. Hym., p. 247.

♂. Length 6.25^{mm}. Polished black, with a few faint scattered punctures. Head one-fourth longer than wide, carinated between the bases of antennæ. Mandibles rufous, piceous at base. Palpi pale. Antennæ 13-jointed, long, filiform, brown, tapering at tips and extending to the apex of the metathorax; the scape is only twice as long as thick at tip; the pedicel a little shorter than the first flagellar joint, not longer than thick; the first flagellar joint slightly longer than thick and about one-fourth shorter than the second; the remaining joints longer, about equal in length but becoming slenderer towards the apex. Prothorax as long as the head, trapezoidal; mesonotum with two abbreviated furrows in ♂, entire in ♀; scutellum with a furrow across the base; metathorax quadrate, with numerous faint raised lines at base; mesopleura smooth with a round fovea just beneath the tegulæ, and divided into two parts by a longitudinal furrow which extends from tegulæ to middle coxæ. Wings hyaline, the venation brown, the transverse median nervure arcuate outwardly with a spurious vein directed towards the disk of the wing.

HABITAT.—Jacksonville, Fla.

Types ♂ and ♀ in Coll. Ashmead.

The spurious backward directed vein from the transverse median nervure caused me to confound it with the genus *Goniozus* in my original description of the species.

***Epyris megacephalus*, sp. nov.**

♀. Length, 6^{mm}. Æneous black; head large, broader than the thorax, rather closely, strongly punctate; mandibles large, the fourth tooth very broad; antennæ and legs rufous, the anterior coxæ black; metathorax with several longitudinal carinæ on the disk, the surface transversely rugulose, the surface at posterior angle smooth, polished. Abdomen pointed ovate, shorter than the thorax, smooth, polished; the apical margins of the segments, after the second, narrowly rufous; segments 2, 3, and 4 nearly equal, longer than the following.

HABITAT.—California.

Type in Coll. Ashmead.

Described from a single specimen.

MESITIUS Spinola.

Compte. rendu Hym. de Para (1846); Mém. Acad. Turin, Sér. II, tom 13 (1853); Westw., Thes. Ent. Oxon., p. 222.

(Type *M. ghiliani* Spin.)

Head oblong, subconvex, not much longer than wide; eyes oval; ocelli distinct.

Antennæ 13-jointed, in ♂ long, in ♀ much shorter, the scape thickened, about four times as long as the pedicel, the following joints short.

Maxillary palpi rather long, 6-jointed, the three basal joints gradually increasing slightly in length, the three terminal ones longer and subequal; maxilla terminates in three membranous ciliated lobes; labial palpi 3-jointed, the joints nearly equal.

Mandibles oblong, with the apex oblique and but slightly sinuated; in the ♀ the outer tooth is small, acute, followed by a very small tooth, the rest of the surface scarcely denticulate; in ♂ 4- or 5-dentate.

Thorax: Prothorax long, triangular or trapezoidal, the apex at the junction with the head contracted, with a deep transverse furrow above; mesonotum usually with two distinct furrows, often abbreviated posteriorly; scutellum with two foveæ at base; metathorax with prominent posterior angles, the dorsum with many longitudinal carinæ.

Front wings with a moderate sized stigma, a long, incomplete marginal cell and two basal cells, the apices of both being more or less oblique.

Abdomen ovate or oblong-ovate, smooth, the second segment the longest, the apical margins sinuate or emarginate.

Legs as in *Epyris*, the claws slender, nearly straight, with a tooth at the middle.

This genus closely resembles *Epyris* and great care is necessary to distinguish it from that genus. As far as the North American species are concerned I have had no difficulty in separating them by the two foveæ at the base of the scutellum.

Westwood, in Thesaurus Entomologicus Oxoniensis, p. 222, and in the Transactions of the Entomological Society of London, 1881, p. 125, states that the genera *Isobrachium* Förster (Hym. Stud., II, p. 96, 1856) and *Heterocælia* Dahlbom (Hym. Europ., II, p. 21, 1854) are synonymous with *Mesitius*, an opinion in which I can not concur. The apical segments of the abdomen of *Heterocælia nigriventris* Dahl., the type of the genus, is figured by Dahlbom, loc. cit., p. 23, and it, as well as the description, plainly point to a chrysidid. Dahlbom also figures it on Pl. I, Fig. 15. A careful comparison of this figure with Westwood's (Thes., Pl. 31, Fig. 10) plainly shows that Dahlbom has a genuine chrysidid and Westwood a genuine proctotrypid.

It is inexplicable to me how so careful a worker as Westwood could have made so grave an error. Förster, in his definition of the genus *Isobrachium*, evidently confused and correlated as sexes two distinct insects. His *Isobrachium dichotomus* is a ♀, and evidently a genuine

Mesitius, while its supposed ♂, *Omalus fuscicornis* Jurine, is a genuine *Isobrachium*. An error of this kind does not necessarily invalidate the genus, the male still holding good as the type of the genus. A male specimen of *Omalus fuscicornis* is in my collection, and although it closely resembles males of *Epyris* and *Mesitius* it is quite distinct, as I have pointed out, and it is here made the type of the genus *Isobrachium* Förster.

The following table will be found useful in separating the North American species:

TABLE OF SPECIES.

Coxæ and legs pale rufous or honey-yellow	2
Coxæ and femora black; wings subhyaline or fuscous.	
Antennæ and legs black, the tarsi fuscous ♂	M. MONTICOLA Ashm.
Antennæ and legs dark rufous ♀	M. VANCOUVERENSIS, sp. nov.
Front coxæ and femora black, middle and posterior femora rufous, or only slightly dusky.	
Trochanters, tibiæ, and tarsi rufous.	
Wings subfuscous ♀	M. NEVADENSIS, sp. nov.
Wings hyaline.	
Anterior tibiæ and tarsi and middle and posterior legs fuscous; antennæ dark fuscous ♂	M. MINUTUS, sp. nov.
Anterior tibiæ and tarsi and middle and posterior legs, brownish-yellow; their femora more or less dusky; antennæ rufous ♀.	
	M. CALIFORNICUS, sp. nov.
2. Wings subhyaline.	
Legs brownish-yellow or pale rufous.	
Tip of abdomen not rufous; metathorax with about 7 raised lines, the lateral abbreviated; ♂ antennæ fuscous; ♀ antennæ yellow.	
	M. BIFOVEOLATUS, sp. nov.
Tip of abdomen rufous; metathorax with about 12 raised lines ♀.	
	M. TEXANUS, sp. nov.
Wings not fully developed, reaching only slightly beyond base of abdomen.	
Legs rufous	M. BRACHYPTERUS, sp. nov.

Mesitius monticola Ashm.

Epyris monticola Ashm. Bull. No. 1, Col. Biol. Assoc., p. 8. 1890, ♂.

♂. Length 4^{mm}. Black, smooth, shining. Head sparsely punctate, each ocellus surrounded in front by a depression. Antennæ black, covered with a fuscous pubescence, 13-jointed, reaching to the middle of the metathorax, the first joint the thickest, the length of the fourth, the second joint the shortest, the third slightly longer, the fourth and following joints slightly longer than the third and about of an equal length or very nearly so; terminally the antennæ are a little thinner than at base. Thorax above with some rather long, fuscous hairs, trapezoidal, the mesonotum with two grooves, slightly converging toward each other posteriorly but still widely separated. Scutellum flattened, with two small, widely-separated foveæ at base, each fovea being exactly opposite

the termination of the mesonotal grooves. Mesopleura finely, microscopically sculptured, with a rounded impression or fovea at the middle. Metathorax quadrate, truncate behind, the margins delicately keeled and a delicate longitudinal keel down the center, the disk toward the base delicately longitudinally wrinkled; on each side, between the wrinkled portion and the lateral margins, is a smoother space that exhibits a minutely transverse strigose sculpture; the truncature is a little depressed in the middle and with a delicate median keel. Legs black; the tibiae and tarsi are rather densely covered with a brownish pubescence and in consequence appear brown. Abdomen black, polished, the second segment the longest. Wings hyaline, veins brown; the second basal cell is half the length of the basal nervure longer than the first, the radius very long, as long as the second basal cell.

HABITAT.—Wales Canyon, Colorado.

Type ♂ in Coll. Ashmead.

Described from a single specimen, received from T. D. A. Cockerell.

Mesitius vancouverensis sp. nov.

(Pl. IV, Fig. 5, ♀.)

♀. Length 6.4^{mm}. Black, shining, impunctured, except a few small scattered punctures on the head and thorax. Head oval, 1½ times as long as wide. Mandibles and palpi rufous; the large outer tooth black. Antennae 13-jointed, acuminate at tips, extending to base of metathorax, the flagellar joints after the first all longer than thick, the first about equal with the pedicel, not, or scarcely, longer than thick. Prothorax very long, three times the length of the mesonotum, the latter with 2 parallel furrows, faint anteriorly, more deeply impressed posteriorly; scutellum with 2 foveae at base directly opposite the mesonotal lines; metathorax almost smooth, quadrate; there is a median longitudinal carina extending to the apex and the surface on each side is finely sculptured. Tegulae pale rufous. Wings subfuscous, the venation brown; the stigmal vein is very long, almost forming a closed radial cell; the transverse medial nervure is strongly angularly curved, so that its apex is parallel with the apex of the basal nervure. Legs black, the tibiae and tarsi dark rufous. Abdomen ovate, shorter but wider than the thorax, black and shining, with the extreme apical edges of the segments tinged with rufous, sparsely pilose.

HABITAT.—Vancouver Island.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from W. Hague Harrington.

Mesitius nevadensis sp. nov.

♀. Length 6^{mm}. Very close to *M. vancouverensis*, but differs as follows: The legs, except the front coxae and femora, are rufous, the middle and posterior femora rufo-piceous; mandibles terminating in a

long blunt tooth, the surface within obtuse, scarcely denticulate, while the flagellar joints, after the first, are twice as long as thick.

HABITAT.—Nevada.

Type ♀ in Coll. Ashmead.

Described from a single specimen.

Mesitius minutus, sp. nov.

♂. Length, 2.2^{mm}. Black, shining, the surface minutely coriaceous, very finely sparsely pubescent. Head a little longer than broad across the eyes. Mandibles rufous, not broadened at tips, the outer tooth acute, followed by about 4 very minute denticulations. Antennæ 13-jointed, long, brown; scape stout, not more than twice as long as thick and very little longer than the first funicular joint; pedicel and first funicular joint about equal; the remaining joints longer, fully thrice as long as thick. Prothorax twice as long as the mesonotum, rounded anteriorly; mesonotum with 2 furrows more deeply impressed posteriorly; scutellum with two oblique foveæ opposite the mesonotal furrows; metathorax subquadrate, the posterior angles a little rounded, minutely coriaceous, with a median longitudinal carina and some very short raised lines at base. Tegulæ brownish-yellow. Wings hyaline, the venation yellowish or pale; the transverse medial nervure curved outwardly. Legs rufous, coxæ and anterior femora black, the middle and posterior femora fuscous. Abdomen polished black, shorter than the thorax, the third segment one-third longer than the fourth.

HABITAT.—Arlington, Va.

Type ♂ in Coll. Ashmead.

Described from a single specimen.

Mesitius californicus, sp. nov.

♀. Length, 3.1^{mm}. Polished black, the head alutaceous. Head oblong, 1½ times as long as broad, the eyes whitish. Mandibles brownish-yellow, truncate but not broadened at apex, the outer tooth acute, followed by about 4 minute teeth. Antennæ 13-jointed, extending to the tegulæ; scape stout, piceous, as long as the three following joints united, a little curved and narrowed at base; flagellum brown, tapering towards tip; pedicel and first flagellar joint about equal, the following joints 1½ times as long as thick, the last longer. Prothorax fully thrice as long as the metanotum, rounded before; mesonotum with 2 nearly parallel furrows and a delicate short line on the scapulæ; scutellum with 2 oblique foveæ at base; metathorax about 1½ times as long as wide, minutely sculptured with a median carina and some faint, short, irregular raised lines at base. Wings hyaline, very faintly tinged, the nervures brown, the venation as in *vancouverensis*. Legs rufous, coxæ and anterior femora black, middle and posterior femora more or less piceous. Abdomen oblong ovate, nearly as long as the thorax, black,

sparsely pilose, especially at tip; the extreme apical margins of segments very slightly rufous.

HABITAT.—California.

Types ♀ in Coll. Ashmead and National Museum.

Described from several specimens.

Mesitius bifoveolatus, sp. nov.

♀. Length, 5.5^{mm}. Polished black, impunctured, the surface microscopically alutaceous; antennæ, mandibles, and legs entirely rufous. Head about one and a half times as long as wide. The outer tooth of mandibles large, acute. Antennæ 13-jointed, reaching to the tegulæ, twisted; the scape swollen, as long as the 4 following joints; pedicel longer but slightly narrower than the first flagellar joint; the flagellar joints very slightly but gradually increasing in length, the first wider than long, the last very slightly more than twice as long as thick. Prothorax three and a half times as long as the mesonotum, rounded before, the superior edge of collar rufous; mesonotum with 2 distinct furrows on a delicate line on the scapulæ; scutellum with 2 oblique foveæ at base; metathorax quadrate, with numerous raised lineations at the middle and base, almost smooth towards the lateral margins, the truncate sides and apex microscopically striated. Tegulæ yellow. Wings subhyaline, the venation yellow and as in *vanconverensis*. Abdomen pointed ovate, much shorter than the thorax, polished black, pilose towards apex and with the extreme edges of apical margins of the last three or four segments rufous.

The ♂ is from 3.5 to 4^{mm} long and is recognized at once by the long fuscous antennæ, as long, or nearly as long, as the body, the first flagellar joint being half again as long as the pedicel, the joints beyond fully four times as long as thick, the last 5 or 6 times as long as thick, and by the more fuscous wings; otherwise it is quite similar.

HABITAT.—Georgia, Florida, Canada.

Types in National Museum and Coll. Ashmead.

Described from several specimens.

Mesitius brachypterus, sp. nov.

♀. Length, 3.6^{mm}. Polished black, with only a few scattered punctures on the head and prothorax. Head oblong, one-fourth longer than wide. Antennæ 13-jointed, pale ferruginous, about twice as long as the head; scape as long as the first three joints of the flagellum united; pedicel a little longer than wide; first flagellar joint not longer than wide and narrower than the following joints, which are slightly longer than thick. Prothorax long, as long as the head; mesonotum very short, scarcely as long as the scutellum, with 2 delicate furrows converging posteriorly and terminating in a rounded puncture before attaining the posterior margin; scutellum with 2 oblique foveæ at base; metathorax quadrate, finely shagreened at base, with a faint median

longitudinal carina. Wings not fully developed, reaching only to the tip of the first abdominal segment. Legs rufous, the anterior femora above slightly fuscous. Abdomen pointed ovate, black, shining, sparsely pilose, the apical margins of the segments tinged with rufous.

HABITAT.—Carolina.

Type ♀ in Berlin Museum.

Described from a single specimen, labeled "Carolina, Zimmermann."

Mesitius texanus, sp. nov.

♀. Length 3.2^{mm}. Apterous; black, shining; head oblong, feebly sparsely punctate; thorax coriaceous; antennæ, mandibles, and legs brownish-yellow; metathorax with a single central longitudinal carina, and three or four very short raised lines on either side at base. Abdomen ovate, as long as the thorax and much wider, polished black, the apical margin of the third and following segments narrowly testaceous. The pedicel and the first flagellar joint are about equal, smaller than the following, the following joints being a little longer than thick.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen, distinguished by the absence of wings.

ANOXUS Thomson.

Öfvers. af K. Vet.—Akad., 1861, p. 452.

(Type *A. boops* Thoms.)

Head oblong; the ocelli 3, in a triangle on a slight prominence, in ♀ subobsolete; eyes in ♂ oblong, in ♀ more rounded, slightly hairy.

Antennæ 12-jointed, filiform, submoniliform in both sexes, in the ♂ pilose.

Maxillary palpi short, 4-jointed; labial palpi 3-jointed.

Mandibles short, tridentate at apex, the outer tooth acute.

Thorax smooth, without furrows, the prothorax in ♀ much elongated, in ♂ short, rounded anteriorly; mesonotum very short; scutellum bifoveated at base; metathorax subquadrate, truncate posteriorly.

Front wings with two basal cells of nearly an equal length, and a long radial or stigmal vein; the stigma is minute, quadrate, smaller than the parastigma.

Abdomen ovate subpetiolate, the third segment the longest.

Legs as in *Bethylus*.

A genus allied to *Epyris* and *Mesitius*, but readily distinguished by the 12-jointed antennæ, mesonotal, mandibular and palpal characters. The venation also sufficiently separates it from *Bethylus* and *Cephalonomia*.

Two species have been discovered as follows:

Anoxus Chittendenii, sp. nov.

(Pl. IV, Fig. 6, ♂.)

♂. Length, 1.5^{mm}. Black, shining, impunctured, except the pleura and metathorax. The head is very slightly longer than wide, with a prominent clypeal carina. Mandibles short, black or piceous, the outer tooth conic acute. Eyes oval, slightly hairy. Antennæ 12-jointed, piceous, extending beyond the base of the metathorax, sparsely covered with white hairs; the scape is about the length of the eye or twice as long as the pedicel; the first flagellar joint is slightly smaller than the second; remaining joints very slightly larger, the last the longest, fusiform. Prothorax as long as the mesonotum and scutellum together, rounded before; mesonotum broader than long with a slight impressed scapular line near the tegulæ; scutellum small, rounded posteriorly, with an impressed line at base; mesopleura with a small round fovea on the disk; metathorax quadrate, truncate behind and a little contracted at sides towards the insertion of hind wings, the angles slightly rounded, the dorsum closely punctulate. Wings hyaline, fringed, the venation pale, the anal nervure in consequence almost obliterated. Legs piceous black, the tarsi white. Abdomen shorter than the thorax, depressed, black, smooth, and shining.

HABITAT.—Ithaca, New York.

Types in National Museum and Coll. Ashmead.

Described from 3 specimens, received from Mr. F. H. Chittenden, and in honor of whom the species is named. Mr. Chittenden informs me he reared them from a coleopteron, *Cis* sp.

Anoxus lævis, sp. nov.

♀. Length, 2.2^{mm}. Polished black, impunctured. Head a little longer than wide; ocelli subobsolete, partially hidden; eyes large, oblong-oval, with a wide space between them and the mandibles, the cheeks separated from the face by a grooved line. Antennæ 12-jointed, twice the length of the head, piceous; scape clavate, about one-third the length of the head, pedicel larger than the first flagellar joint; remaining joints, except the last, submoniliform, the last twice as long as the penultimate. Prothorax long, narrowed in front, about four times as long as the mesonotum; scutellum with 2 oblique foveæ at base; metathorax much longer than wide, with a median carina, towards the base minutely shagreened. Wings hyaline, ciliated, the venation yellowish; the radial vein is very long, nearly one-half longer than the first basal cell. Legs piceous black, the trochanters, a dot at base of tibiæ and tarsi, rufous. Abdomen pointed-ovate, highly polished black, a little shorter than the thorax, the third segment the longest.

HABITAT.—Washington, D. C.

Type ♀ in Coll. Ashmead.

Described from a single specimen taken on a window pane.

Anoxus musculus Say.

Bethylus musculus Say, Bost. Jour., 1, 280; Lec. Ed. Say, 11, p. 726; Cress. Syn. Hym., p. 247.

Black; antennæ and feet yellowish; abdomen depressed.

Inhabits Indiana.

Body somewhat polished, impunctured, black; antennæ dusky, honey-yellow towards the base; mandibles honey-yellow; thorax with the anterior segment not much elongated; dorsal impressed lines very obvious; wings hyaline; radial nervure extended, equally distinctly near to the tip of the wing; discoidal cellule none; metathorax minutely and distinctly punctured or granulated above, and minutely lineated each side; abdomen depressed, polished, piceous black, distinctly petiolated; feet honey-yellow; thighs a little dusky in the middle; length over one-twentieth of an inch. (Say.)

Unknown to me. The long radial nervure will exclude the species from *Bethylus* as now restricted, and it is placed here temporarily or until it is rediscovered and its true position ascertained.

PERISEMUS Förster.

Hym. Stud., 11, p. 95, 1856.

Episemus Thoms. Öfv., 1861, p. 452.

(Type *P. triareolatus* Först.)

Head large, oblong, much wider than the thorax; eyes prominent, smooth; ocelli small, but distinct.

Antennæ 12-jointed, subsetaceous, somewhat distant at base, separated by a frontal lamina.

Maxillary palpi 6-jointed; labial palpi 4-jointed.

Mandibles 4- or 5-dentate.

Thorax elongate, the prothorax rounded anteriorly; mesonotum short, smooth, without furrows; metathorax subquadrate, obliquely rounded off posteriorly.

Front wings with a subquadrate stigma, a parastigma (rarely wanting), an incomplete radial cell, and two basal cells, the first of which is longer than the second; the basal vein with a branch or spurious vein directed backwards, or at least broken by a stump of a vein. Apterous forms rare.

Abdomen ovate, subsessile, the apical margins of some of the segments sinuate or emarginate.

Legs short, stout, the femora much swollen, the tarsi slender, the basal joint of hind tarsi twice as long as the second, claws simple.

This genus could only be confused with *Goniozus*, with which it agrees, except in having 12-jointed antennæ, and in having a slightly narrower head.

The species known to me may be separated by the aid of the following table:

TABLE OF SPECIES.

FEMALES.

Wingless	3
Winged.	
Stigma and parastigma both present	2
Parastigma entirely wanting.	
Black; trochanters, tibiae, and tarsi pale brown... P. OREGONENSIS, sp. nov.	
2. Coxæ black.	
Middle and posterior legs fuscous, the tarsi yellow; anterior coxæ alone black	P. FORMICOIDES, Prov.
All coxæ and femora black, tibiae and tarsi honey-yellow; mandibles pale.	P. FLORIDANUS, Ashm.
Legs brown; anterior tibiae and tarsi honey-yellow; mandibles black	P. MINIMUS, sp. nov.
Coxæ yellow.	
Legs entirely reddish or honey-yellow	P. MELLIPES, Ashm.
3. Trochanters, tibiae, and tarsi honey-yellow; rest of the legs black	P. PROLONGATUS, Prov.

Perisemus oregonensis, sp. nov.

♀. Length, 5^{mm}. Black, shining; the head and thorax closely, microscopically punctate, the former with some larger scattered thimble-like punctures; metathorax subopaque, without carinae, finely punctate; legs black; all trochanters, tibiae, and tarsi pale brown, the middle tibiae with only one spur. Head large, almost twice as wide as the thorax across the eyes, and a long, prominent, frontal carina. Antennæ 12-jointed, one-fourth longer than the head, honey-yellow, tapering towards tips; the first flagellar joint is about as long as the pedicel, which is a little more than twice as long as thick; remaining joints to the last gradually subequal, the last longer than the penultimate. Wings hyaline, with a slight fuscous tinge at the middle, the veins brown; stigma small, quadrate, black; parastigma wanting; the submedian cell is one-third shorter than the median; the basal vein broken by a stump of a vein beyond the middle; stigmal vein very long, abruptly curved upwards at tip and almost forming a complete marginal cell. Abdomen ovate, not quite as long as the head and thorax together, black and shining, the second, third, fourth, and fifth segments emarginate at the middle.

HABITAT.—Portland, Oregon.

Described from a single specimen obtained from H. F. Wickham.

This is the only species known to me in this genus without a parastigma, and this character, in connection with the single tibial spur on the middle legs, may be sufficient to found a new genus.

Perisemus formicoides Prov.

Bethylus formicoides Prov., Add. et Corr., p. 179; Cress. Syn. Hym., p. 247.

♀. Length, 2.5 to 3^{mm}. Black, polished; legs and antennæ honey-yellow, the latter brownish toward tips; the anterior and posterior

femora blackish toward base. Prothorax very long, flattened, narrowed before, shining, with a fine and somewhat dense punctuation; mesonotum short; metathorax elongate, the sides polished, the disk punctured.

Wings hyaline, the parastigma and stigma brown.

Abdomen elongate oval, polished, black, the apex with sparse hairs.

HABITAT.—Ottawa, Canada.

Type in Coll. Provancher.

Perisemus floridanus Ashm.

(Pl. IV, Fig. 7, ♀.)

Ent. Am., III, p. 76. ♂ ♀; Cress. Syn. Hym., p. 247.

♂ ♀. Length, 2.5 to 3^{mm}. Black, shining, finely, closely punctulate, the head with some scattered, thimble-like punctures. Head a little longer than wide, the frontal carina not extending behind the insertion of antennæ. Mandibles and palpi honey-yellow. Antennæ 12-jointed, honey-yellow, the two or three apical joints dusky; the scape is thick, less than thrice as long as thick; flagellar joints submoniliform, scarcely longer than thick, the last twice as long as thick. Prothorax trapezoidal, longer than wide across the base; mesonotum about as long as the scutellum, the latter with a faint impressed line across the base; metathorax quadrate, smooth, with a faint trace of a median longitudinal carina. Wings hyaline, the costa, stigma, and parastigma dark brown, the other veins honey yellow; the backward-directed branch of the basal vein is not as long as the first branch of the basal. Legs, except coxæ and femora, honey-yellow.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Perisemus minimus, sp. nov.

♀. Length, 1.8 to 2^{mm}. Black, shining; legs brown; anterior tibiae and all tarsi honey-yellow; mandibles black; antennæ honey-yellow, the scape thick, 2½ times as long as thick; pedicel longer than the second flagellar joint, first flagellar joint minute; flagellar joints, after the second, not longer than thick; wings hyaline, the venation pale hyaline, the stigma and parastigma brown. Abdomen pointed-ovate, not longer than the head and thorax together, polished black.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

The small size, shining surface, black mandibles, and color of the legs sufficiently distinguish the species. The head is more like that in *Epyris*, being longer and more narrowed than is usual in this genus.

Perisemus mellipes Ashm.

Ent. Am., III, p. 76, ♀; Cress. Syn. Hym., p. 247.

♀. Length, 3.2^{mm}. Black; the head opaque, finely, densely punctulate; thorax smooth, shining, microscopically punctulate; legs en-

tirely honey-yellow. The head is slightly longer than wide and wider than the thorax, with a frontal carina.

Antennæ 12-jointed, honey-yellow; the scape less than thrice as long as thick; the joints of the flagellum submoniliform, scarcely longer than thick. Thorax as in *floridanus*, the metathorax smooth with a ridge in the middle at base. Wings hyaline, the parastigma and stigma black, the other veins pale yellow; the second basal cell is much shorter than the first; the backward directed branch of the basal vein is curved, but not as long as the first branch of the basal.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***Perisemus prolongus* Prov.**

Bethylus prolongus Prov., Can. Nat., XII, p. 265, ♀; Ashm. Ent. Am., III, p. 97; Cress. Syn. Hym., p. 248.

♀. Length, 4.2^{mm}. Black, shining; the head very large, much broader than the thorax, about twice as long as wide at base and a little broader in front than behind, densely, minutely punctulate, with some feeble thimble-like punctures. Mandibles black. Palpi pale. Antennæ 12-jointed, honey-yellow; the scape stout, more than thrice as long as thick; the flagellum much thinner, tapering towards tip; pedicel as long as the first flagellar joint; the second and third a little stouter than the first and of an equal length; the following a little shorter, all longer than thick. Prothorax subquadrate; mesonotum very short; scutellum with a short, faint transverse line at base; metathorax longer, obliquely rounded off posteriorly, shining, at base finely rugose. Wings aborted, not extending to tip of the metathorax. Legs black, trochanters, tibiae, and tarsi honey-yellow. Abdomen pointed ovate, much wider than the thorax, highly polished, black, segments 2, 3, and 4 emarginate at apex.

HABITAT.—Ottawa, Canada, and Lafayette, Indiana.

Type ♀ in Coll. Ashmead.

Described from the type specimen, kindly given me by Mr. Harrington. In the National Museum is a specimen, reared August 28, 1888, by Mr. F. M. Webster, from *Crambus caliginosellus*.

GONIOZUS Förster.

Hym. Stud., II, p. 96 (1856); *Parasierola* Cam., Trans. Ent. Soc. Lond., 1883, p. 197.

(Type *G. claripennis* Först.)

Head much as in *Perisemus*; in ♂ much broader than the thorax, with a prominent clypeal carina; in ♀ longer and less broad.

Antennæ 13-jointed, subsetaceous, not inserted so far apart as in *Perisemus*, the scape swollen, twice as long as thick, the first flagellar joint minute, smaller than the pedicel, the following joints moniliform, except in the males, rarely much longer than thick.

Maxillary palpi 6-jointed; labial palpi 4-jointed.

Mandibles oblong, truncate at tips, with 4 to 5 minute teeth.

Thorax as in *Perisemus*.

Front wings as in *Perisemus*, except that sometimes the backward-directed branch of the basal nervure is often bent backwards and joins the basal nervure near its origin, forming a small triangular closed discoidal cell (= *Parasierola* Cameron).

Abdomen in ♀ pointed ovate or long conical, in ♂ oblong-oval and more depressed.

Legs stout, the femora very much swollen.

Distinguished from *Perisemus* by having 13, not 12-jointed antennæ. *Parasierola* Cameron is apparently only a section of this genus, having the backward directed branch of the basal nervure a little more elongated and forming a distinct cellule; otherwise it is identical and is here conjoined to *Goniozus*.

TABLE OF SPECIES.

FEMALES.

Species with a small triangular discoidal cell.

Coxæ and femora black; anterior tibiæ and all tarsi yellow... *G. CELLULARIS* Say.

Species without a closed discoidal cell.

Head unusually large 2

Head normal.

Backward-directed branch of the basal nervure as long as the first branch of the basal nervure; legs black.

Anterior tibiæ and all tarsi yellowish.

Wings subhyaline..... *G. FOVEOLATUS* Ashm.

All tibiæ and tarsi yellowish; ♀ with middle and hind tibiæ dusky.

Wings clear hyaline..... *G. PLATYNOTÆ*, sp. nov.

Backward-directed branch of the basal nervure only one-third the length of the first branch of the basal nervure.

Abdomen very long and cylindrical, pointed at tip, much longer than the head and thorax united.

Wings subfuscous..... *G. POLITUS*, sp. nov.

Abdomen very little longer than the thorax, ovate.

Legs brown, the tarsi pale..... *G. COLUMBIANUS*, sp. nov.

Abdomen not longer than the head and thorax united.

All legs, including coxæ, yellow *G. HUBBARDII* How.

2. Legs piceous, tips of tibiæ and tarsi pale.

Wings hyaline..... *G. MEGACEPHALUS*, sp. nov.

MALES.

Wings without a discoidal cellule.

Legs honey-yellow; wings hyaline *G. HUBBARDII* How.

Legs brownish or piceous, the coxæ black.

Wings fuscous or subfuscous.

Anterior tibiæ, trochanters and all tarsi brownish-yellow.

G. FOVEOLATUS Ashm.

All tibiæ and tarsi honey-yellow *G. COLUMBIANUS*

Wings hyaline.

All tibiæ and tarsi brownish-yellow *G. PLATYNOTÆ*

Wings with a discoidal cellule.

Legs piceous, the tibiæ and tarsi pale *G. CELLULARIS* Say.

Goniozus cellularis Say.

Bethylus cellularis Say, Lec. Ed. Say, II, p. 276; Ashm. Ent. Am., III, p. 97; Cress. Syn. Hym., p. 247.

♂ ♀. Length, 2.2 to 3^{mm}. Black, shining, the head with some fine, scattered punctures. Antennæ varying from a honey-yellow to fuscous. Legs piceous, the tibiæ and tarsi often honey-yellow, especially the anterior pair; femora often black. In the male the wings are clear hyaline, in the female fusco-hyaline; the parastigma brown or black; the branch from the basal nervure curves backwards and joins the median nervure near the tip, forming a complete cell which readily distinguishes the species.

HABITAT.—United States.

Specimens in National Museum and Coll. Ashmead.

Found in various parts of the United States. A single specimen is in the National Museum reared by Prof. F. M. Webster, September 17, 1884, from a geometrid larva in wheat stubble; while my collection contains a specimen, reared June 5, 1885, from wheat stalks infested with *Isosoma tritici*.

The species is, without doubt, parasitic on various microlepidoptera.

Goniozus megacephalus, sp. nov.

♀. Length, 2.8^{mm}. Black, shining, with a fine, microscopic punctation and a few larger punctures scattered over the surface. The head is large and long, a little more than one and a half times as long as wide. Mandibles large, black. Antennæ 13-jointed, inserted wide apart, and not much longer than the head, moniliform, yellow; the scape swollen, twice as long as wide. Metathorax smooth without carinæ. Wings hyaline, the parastigma and stigma piceous. The other veins yellowish; the branch of the basal vein is reduced to a mere stump.

Legs brownish piceous, the tips of tibiæ and the tarsi yellow.

HABITAT.—Key West, Fla.

Types in National Museum.

Described from a single ♀ taken by E. A. Schwarz.

Goniozus foveolatus Ashm.

Ent. Am., III, p. 76, ♀; Cress. Syn. Hym., p. 247.

♀. Length, 2.5 to 3^{mm}. Black, shining, but finely, delicately punctate, the head with a few coarse, scattered punctures; transverse furrow at base of scutellum terminates in small, oblique foveæ.

Antennæ 13-jointed, honey-yellow, the scape short, thick, the following joints all small, moniliform. Legs black or piceous; anterior tibiæ and tarsi and the middle and posterior tarsi, honey-yellow. Wings subhyaline; stigma and parastigma black, the other nervures honey-yellow; the basal nervure is broken by a stump of a vein which is less

than half the length of the first branch of the basal nervure. Abdomen cylindric-ovate, a little longer than the head and thorax united.

In the ♂ the middle and posterior tibiæ are pale brown, the abdomen being shorter than the head and thorax united.

HABITAT.—Florida and District of Columbia.

Types in National Museum and Coll. Ashmead.

The species is closely allied to *G. platynotæ*, but its slightly smaller and more slender form, the subhyaline wings, and the black stigma and parastigma, readily distinguish it.

The National Museum contains a specimen, reared April 14, 1882, at Georgiana, Fla., from a tineid larva in dry fungus.

Goniozus platynotæ, sp. nov.

(Pl. IV, Fig. 8, ♀.)

♂ ♀. Length, 3^{mm}. Black, shining, very sparsely pilose; head with a prominent keel between the antennæ, microscopically closely punctulate, with a few larger punctures scattered irregularly over the surface, subopaque. Mandibles, antennæ, and legs pale honey-yellow; the anterior femora vary from a dark brown to black, the middle and posterior femora in ♂ brownish only in the middle; in the female the mandibles are black, and all the femora are black or brownish-piceous, their tibiæ brownish.

Antennæ 13-jointed, extending to the tegulæ (in ♀ a little shorter), moniliform; pedicel small, rounded, much smaller than the first flagellar joint; all the flagellar joints but the last moniliform, the last oval. Metathorax smooth, with a delicate median carina, and carinated along the lateral margins.

Wings hyaline, the parastigma and stigma large, brown, the latter twice as long as wide, rest of the nervures pale yellow; the first basal cell is longer than the second, the basal vein broken by a backward directed branch.

Abdomen as long as the head and thorax united, polished black, the sutures piceous.

HABITAT.—Virginia, Maryland, District of Columbia, and Florida.

Types in National Museum and Coll. Ashmead.

The species is not rare. Dr. Riley reared a single male July 30, 1886, from *Platynota sentana*.

Goniozus politus, sp. nov.

♀. Length, 2.4^{mm}. Black, highly polished, impunctured. Head not wider than the thorax, nearly twice as long as wide, smooth, impunctured.

Antennæ 13-jointed, short, scarcely longer than the head, moniliform, brownish-yellow, dusky or black at apex; scape short, stout, about twice as long as thick; pedicel as long as the last joint; first flagellar joint very minute, half the length of the pedicel, the following joints rounded.

sparsely pilose, especially at tip; the extreme apical margins of segments very slightly rufous.

HABITAT.—California.

Types ♀ in Coll. Ashmead and National Museum.

Described from several specimens.

Mesitius bifoveolatus, sp. nov.

♀. Length, 5.5^{mm}. Polished black, impunctured, the surface microscopically alutaceous; antennæ, mandibles, and legs entirely rufous. Head about one and a half times as long as wide. The outer tooth of mandibles large, acute. Antennæ 13-jointed, reaching to the tegulæ, twisted; the scape swollen, as long as the 4 following joints; pedicel longer but slightly narrower than the first flagellar joint; the flagellar joints very slightly but gradually increasing in length, the first wider than long, the last very slightly more than twice as long as thick. Prothorax three and a half times as long as the mesonotum, rounded before, the superior edge of collar rufous; mesonotum with 2 distinct furrows on a delicate line on the scapulæ; scutellum with 2 oblique foveæ at base; metathorax quadrate, with numerous raised lineations at the middle and base, almost smooth towards the lateral margins, the truncate sides and apex microscopically striated. Tegulæ yellow. Wings subhyaline, the venation yellow and as in *vancouverensis*. Abdomen pointed ovate, much shorter than the thorax, polished black, pilose towards apex and with the extreme edges of apical margins of the last three or four segments rufous.

The ♂ is from 3.5 to 4^{mm} long and is recognized at once by the long fuscous antennæ, as long, or nearly as long, as the body, the first flagellar joint being half again as long as the pedicel, the joints beyond fully four times as long as thick, the last 5 or 6 times as long as thick, and by the more fuscous wings; otherwise it is quite similar.

HABITAT.—Georgia, Florida, Canada.

Types in National Museum and Coll. Ashmead.

Described from several specimens.

Mesitius brachypterus, sp. nov.

♀. Length, 3.6^{mm}. Polished black, with only a few scattered punctures on the head and prothorax. Head oblong, one-fourth longer than wide. Antennæ 13-jointed, pale ferruginous, about twice as long as the head; scape as long as the first three joints of the flagellum united; pedicel a little longer than wide; first flagellar joint not longer than wide and narrower than the following joints, which are slightly longer than thick. Prothorax long, as long as the head; mesonotum very short, scarcely as long as the scutellum, with 2 delicate furrows converging posteriorly and terminating in a rounded puncture before attaining the posterior margin; scutellum with 2 oblique foveæ at base; metathorax quadrate, finely shagreened at base, with a faint median

longitudinal carina. Wings not fully developed, reaching only to the tip of the first abdominal segment. Legs rufous, the anterior femora above slightly fuscous. Abdomen pointed ovate, black, shining, sparsely pilose, the apical margins of the segments tinged with rufous.

HABITAT.—Carolina.

Type ♀ in Berlin Museum.

Described from a single specimen, labeled "Carolina, Zimmermann."

Mesitius texanus, sp. nov.

♀. Length 3.2^{mm}. Apterous; black, shining; head oblong, feebly sparsely punctate; thorax coriaceous; antennæ, mandibles, and legs brownish-yellow; metathorax with a single central longitudinal carina, and three or four very short raised lines on either side at base. Abdomen ovate, as long as the thorax and much wider, polished black, the apical margin of the third and following segments narrowly testaceous. The pedicel and the first flagellar joint are about equal, smaller than the following, the following joints being a little longer than thick.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen, distinguished by the absence of wings.

ANOXUS Thomson.

Öfvers. af K. Vet.—Akad., 1861, p. 452.

(Type *A. boops* Thoms.)

Head oblong; the ocelli 3, in a triangle on a slight prominence, in ♀ subobsolete; eyes in ♂ oblong, in ♀ more rounded, slightly hairy.

Antennæ 12-jointed, filiform, submoniliform in both sexes, in the ♂ pilose.

Maxillary palpi short, 4-jointed; labial palpi 3-jointed.

Mandibles short, tridentate at apex, the outer tooth acute.

Thorax smooth, without furrows, the prothorax in ♀ much elongated, in ♂ short, rounded anteriorly; mesonotum very short; scutellum bifoveated at base; metathorax subquadrate, truncate posteriorly.

Front wings with two basal cells of nearly an equal length, and a long radial or stigmal vein; the stigma is minute, quadrate, smaller than the parastigma.

Abdomen ovate subpetiolate, the third segment the longest.

Legs as in *Bethylus*.

A genus allied to *Epyris* and *Mesitius*, but readily distinguished by the 12-jointed antennæ, mesonotal, mandibular and palpal characters. The venation also sufficiently separates it from *Bethylus* and *Cephalonomia*.

Two species have been discovered as follows:

Anoxus Chittendenii, sp. nov.

(Pl. iv, Fig. 6, ♂.)

♂. Length, 1.5^{mm}. Black, shining, impunctured, except the pleura and metathorax. The head is very slightly longer than wide, with a prominent clypeal carina. Mandibles short, black or piceous, the outer tooth conic acute. Eyes oval, slightly hairy. Antennæ 12-jointed, piceous, extending beyond the base of the metathorax, sparsely covered with white hairs; the scape is about the length of the eye or twice as long as the pedicel; the first flagellar joint is slightly smaller than the second; remaining joints very slightly larger, the last the longest, fusiform. Prothorax as long as the mesonotum and scutellum together, rounded before; mesonotum broader than long with a slight impressed scapular line near the tegulae; scutellum small, rounded posteriorly, with an impressed line at base; mesopleura with a small round fovea on the disk; metathorax quadrate, truncate behind and a little contracted at sides towards the insertion of hind wings, the angles slightly rounded, the dorsum closely punctulate. Wings hyaline, fringed, the venation pale, the anal nervure in consequence almost obliterated. Legs piceous black, the tarsi white. Abdomen shorter than the thorax, depressed, black, smooth, and shining.

HABITAT.—Ithaca, New York.

Types in National Museum and Coll. Ashmead.

Described from 3 specimens, received from Mr. F. H. Chittenden, and in honor of whom the species is named. Mr. Chittenden informs me he reared them from a coleopteron, *Cis* sp.

Anoxus lævis, sp. nov.

♀. Length, 2.2^{mm}. Polished black, impunctured. Head a little longer than wide; ocelli subobsolete, partially hidden; eyes large, oblong-oval, with a wide space between them and the mandibles, the cheeks separated from the face by a grooved line. Antennæ 12-jointed, twice the length of the head, piceous; scape clavate, about one-third the length of the head, pedicel larger than the first flagellar joint; remaining joints, except the last, submoniliform, the last twice as long as the penultimate. Prothorax long, narrowed in front, about four times as long as the mesonotum; scutellum with 2 oblique foveæ at base; metathorax much longer than wide, with a median carina, towards the base minutely shagreened. Wings hyaline, ciliated, the venation yellowish; the radial vein is very long, nearly one-half longer than the first basal cell. Legs piceous black, the trochanters, a dot at base of tibiae and tarsi, rufous. Abdomen pointed-ovate, highly polished black, a little shorter than the thorax, the third segment the longest.

HABITAT.—Washington, D. C.

Type ♀ in Coll. Ashmead.

Described from a single specimen taken on a window pane.

Anoxus musculus Say.

Bethylus musculus Say, Bost. Jour., I, 280; Lec. Ed. Say, II, p. 726; Cress. Syn. Hym., p. 247.

Black; antennæ and feet yellowish; abdomen depressed.

Inhabits Indiana.

Body somewhat polished, impunctured, black; antennæ dusky, honey-yellow towards the base; mandibles honey-yellow; thorax with the anterior segment not much elongated; dorsal impressed lines very obvious; wings hyaline; radial nervure extended, equally distinctly near to the tip of the wing; discoidal cellule none; metathorax minutely and distinctly punctured or granulated above, and minutely lineated each side; abdomen depressed, polished, piceous black, distinctly petiolated; feet honey-yellow; thighs a little dusky in the middle; length over one-twentieth of an inch. (Say.)

Unknown to me. The long radial nervure will exclude the species from *Bethylus* as now restricted, and it is placed here temporarily or until it is rediscovered and its true position ascertained.

PERISEMUS Förster.

Hym. Stud., II, p. 95, 1856.

Episemus Thoms. Öfv., 1861, p. 452.

(Type *P. triareolatus* Först.)

Head large, oblong, much wider than the thorax; eyes prominent, smooth; ocelli small, but distinct.

Antennæ 12-jointed, subsetaceous, somewhat distant at base, separated by a frontal lamina.

Maxillary palpi 6-jointed; labial palpi 4-jointed.

Mandibles 4- or 5-dentate.

Thorax elongate, the prothorax rounded anteriorly; mesonotum short, smooth, without furrows; metathorax subquadrate, obliquely rounded off posteriorly.

Front wings with a subquadrate stigma, a parastigma (rarely wanting), an incomplete radial cell, and two basal cells, the first of which is longer than the second; the basal vein with a branch or spurious vein directed backwards, or at least broken by a stump of a vein. Apterous forms rare.

Abdomen ovate, subsessile, the apical margins of some of the segments sinuate or emarginate.

Legs short, stout, the femora much swollen, the tarsi slender, the basal joint of hind tarsi twice as long as the second, claws simple.

This genus could only be confused with *Goniozus*, with which it agrees, except in having 12-jointed antennæ, and in having a slightly narrower head.

The species known to me may be separated by the aid of the following table:

TABLE OF SPECIES.

FEMALES.

Wingless	3
Winged.	
Stigma and parastigma both present	2
Parastigma entirely wanting.	
Black; trochanters, tibiae, and tarsi pale brown....	<i>P. OREGONENSIS</i> , sp. nov.
2. Coxæ black.	
Middle and posterior legs fuscous, the tarsi yellow; anterior coxæ alone black	<i>P. FORMICOIDES</i> , Prov.
All coxæ and femora black, tibiae and tarsi honey-yellow; mandibles pale.	<i>P. FLORIDANUS</i> , Ashm.
Legs brown; anterior tibiae and tarsi honey-yellow; mandibles black	<i>P. MINIMUS</i> , sp. nov.
Coxæ yellow.	
Legs entirely reddish or honey-yellow	<i>P. MELLIPES</i> , Ashm.
3. Trochanters, tibiae, and tarsi honey-yellow; rest of the legs black	<i>P. PROLONGATUS</i> , Prov.

Perisemus oregonensis, sp. nov.

♀. Length, 5^{mm}. Black, shining; the head and thorax closely, microscopically punctate, the former with some larger scattered thimble-like punctures; metathorax subopaque, without carinae, finely punctate; legs black; all trochanters, tibiae, and tarsi pale brown, the middle tibiae with only one spur. Head large, almost twice as wide as the thorax across the eyes, and a long, prominent, frontal carina. Antennæ 12-jointed, one-fourth longer than the head, honey-yellow, tapering towards tips; the first flagellar joint is about as long as the pedicel, which is a little more than twice as long as thick; remaining joints to the last gradually subequal, the last longer than the penultimate. Wings hyaline, with a slight fuscous tinge at the middle, the veins brown; stigma small, quadrate, black; parastigma wanting; the submedian cell is one-third shorter than the median; the basal vein broken by a stump of a vein beyond the middle; stigmal vein very long, abruptly curved upwards at tip and almost forming a complete marginal cell. Abdomen ovate, not quite as long as the head and thorax together, black and shining, the second, third, fourth, and fifth segments emarginate at the middle.

HABITAT.—Portland, Oregon.

Described from a single specimen obtained from H. F. Wickham.

This is the only species known to me in this genus without a parastigma, and this character, in connection with the single tibial spur on the middle legs, may be sufficient to found a new genus.

Perisemus formicoides Prov.

Bethylus formicoides Prov., Add. et Corr., p. 179; Cress. Syn. Hym., p. 247.

♀. Length, 2.5 to 3^{mm}. Black, polished; legs and antennæ honey-yellow, the latter brownish toward tips; the anterior and posterior

femora blackish toward base. Prothorax very long, flattened, narrowed before, shining, with a fine and somewhat dense punctuation; mesonotum short; metathorax elongate, the sides polished, the disk punctured.

Wings hyaline, the parastigma and stigma brown.

Abdomen elongate oval, polished, black, the apex with sparse hairs.

HABITAT.—Ottawa, Canada.

Type in Coll. Provancher.

Perisemus floridanus Ashm.

(Pl. IV, Fig. 7, ♀.)

Ent. Am., III, p. 76. ♂ ♀; Cress. Syn. Hym., p. 247.

♂ ♀. Length, 2.5 to 3^{mm}. Black, shining, finely, closely punctulate, the head with some scattered, thimble-like punctures. Head a little longer than wide, the frontal carina not extending behind the insertion of antennæ. Mandibles and palpi honey-yellow. Antennæ 12-jointed, honey-yellow, the two or three apical joints dusky; the scape is thick, less than thrice as long as thick; flagellar joints submoniliform, scarcely longer than thick, the last twice as long as thick. Prothorax trapezoidal, longer than wide across the base; mesonotum about as long as the scutellum, the latter with a faint impressed line across the base; metathorax quadrate, smooth, with a faint trace of a median longitudinal carina. Wings hyaline, the costa, stigma, and parastigma dark brown, the other veins honey yellow; the backward-directed branch of the basal vein is not as long as the first branch of the basal. Legs, except coxæ and femora, honey-yellow.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Perisemus minimus, sp. nov.

♀. Length, 1.8 to 2^{mm}. Black, shining; legs brown; anterior tibiæ and all tarsi honey-yellow; mandibles black; antennæ honey-yellow, the scape thick, 2½ times as long as thick; pedicel longer than the second flagellar joint, first flagellar joint minute; flagellar joints, after the second, not longer than thick; wings hyaline, the venation pale hyaline, the stigma and parastigma brown. Abdomen pointed-ovate, not longer than the head and thorax together, polished black.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

The small size, shining surface, black mandibles, and color of the legs sufficiently distinguish the species. The head is more like that in *Epyris*, being longer and more narrowed than is usual in this genus.

Perisemus mellipes Ashm.

Ent. Am., III, p. 76, ♀; Cress. Syn. Hym., p. 247.

♀. Length, 3.2^{mm}. Black; the head opaque, finely, densely punctulate; thorax smooth, shining, microscopically punctulate; legs en-

the anterior pair greatly lengthened; femora obclavate, the front pair the stoutest; tibiæ very long and slender, very little thicker at tips than at the base; anterior tarsi chelate, middle and posterior tarsi, 5-jointed, shorter than their tibiæ, the claws and pulvilli small.

This genus is readily distinguished from all the other genera in the group by its peculiar shape, the strong constriction between the meso- and meta-thorax, the absence of wings and scutellum, and the much longer and more slender tibiæ. In its cephalic and antennal characters it approaches nearest to *Dryinus*, but otherwise it is quite different, that genus having wings, a distinct large scutellum, and is without the strong constriction between the meso- and meta-thorax.

The male is unknown, but I have reasons for believing that the genus *Labeo* Haliday, known only in the male sex, will yet prove to be the opposite sex of this peculiar genus.

Mr. Cameron, in *Biologia Centrali-Americana*, has described two or three species that he supposed were wingless males, but as these so-called males have chelate claws, I suspect he has mistaken females for males, as all the males in this group known to me have simple, not chelate claws, the chelate claws being a character peculiar to the females.

Our species may be tabulated as follows:

TABLE OF SPECIES.

FEMALES.

Species more or less brown or pale brownish-yellow..... 2

Species, excepting a portion of the head, black.

Thorax punctulate.

Head not twice as broad as long; metathorax, anteriorly and posteriorly, transversely striated.

Occiput, face, and two basal joints of antennæ, yellow, rest of antennæ fuscous.....G. CONTORTULUS, Patton.

Head twice as broad as long; metathorax, anteriorly and posteriorly, transversely striated.

Occiput, face, and antennæ, except the three terminal joints, yellow.

G. FLAVIFRONS, sp. nov.

Thorax polished, shining.

Head entirely black.....G. DECIPIENS, Prov.

2. Abdomen black; head and thorax dark reddish-brown.

Metathorax coarsely transversely striated; antennæ yellow; legs piceous or brown, the coxæ and tarsi yellow.....G. CALIFORNICUS, sp. nov.

Abdomen piceous; head, thorax, and legs pale or yellowish.

Metathorax smooth, polished, with only a few faint, transverse striae.

G. BICOLOR, sp. nov.

Gonatopus contortulus Patton.

Can. Ent. xi, p. 65 (1879), ♀; Ashm. Ent. Am. iii, p. 74; Cress. Syn. Hym., p. 246.

“♀. Length 3.5^{mm}. Head testaceous, mandibles and scape of antennæ white; the teeth of the mandibles, second joint of the antennæ, and a line on the scape posteriorly, pale testaceous, remainder of antennæ fuscous. A large fuscous spot on the under side of head, and

another above in front of and including the ocelli; a raised line extending forwards from anterior ocellus to the face. Head transverse, broader than thorax or abdomen; convex beneath, concave behind, above and in front; the mouth prominent; the eyes longitudinally ovate, prominent, not reaching the posterior border of the head. Antennæ 10-jointed, the basal joint stout, the second joint more slender and one-half as long as the first, the third very slender and equal in length to the first and second together, the fourth and following joints slender but gradually becoming thicker, the fourth one-half as long as the third, the fifth a little shorter than the fourth and a little longer than each of the following joints. Thorax and abdomen piceous black. The thorax slender, binodose. The trochanters formed of only one joint. Anterior coxæ long and robust, pale testaceous with a darker stripe above; anterior trochanters whitish, more slender, clavate; femora large, obclavate, dark testaceous, paler at tip; tibiæ as long as the femora and, together with the first tarsal joint, pale testaceous; terminal joint of the tarsi and the chelæ whitish. The chelæ at rest extending back to the tip of the first joint of the tarsus, the outer claw pointed and slightly curved at the extremity, the inner claw more robust, ciliated internally and with a wrenched-shaped curve at the extremity; pulvillus tipped with fuscous. The other legs slender, the coxæ and the base of femora dilated, testaceous, the coxæ, base of femora, tibiæ above and claw-joint of tarsi, darker. Abdomen ovate, pointed at tip and with a short petiole." (*Patton.*)

HABITAT.—Waterbury, Conn.

Type in Coll. American Entomological Society, at Philadelphia.

The type is in poor condition and I have copied Mr. Patton's description. It was captured at Waterbury, Conn., on herbage a few inches above the ground, August 18, 1879.

Gonatopus flavifrons, sp. nov.

(Pl. v, Fig. 4, ♀.)

♀. Length, 4.4^{mm}. Black, shining, with a fine shagreened punctuation. Occiput, face, mandibles, except teeth, palpi, antennæ, except the three terminal joints, which are fuscous, and legs, yellow; the long large anterior coxæ have two black spots beneath; the greatly swollen anterior femora above are almost entirely black, while their tibiæ have a black streak above; the middle and posterior coxæ and femora basally are also more or less black above. The anterior or constricted part of the metathorax and its posterior face are transversely striated.

The abdomen, except blotches at the sides of the first segment, the apical edge of the third and fourth segments, especially laterally, and the terminal segment, which are rufous, is highly polished, black.

HABITAT.—Albany, N. Y.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from Mr. W. H. Harrington, who informs me that it was captured by Mr. Van Duzee at the above place.

The species comes nearest to *G. contortulus* Patton; but it is larger, the head broader, and it differs also in colorational detail.

***Gonatopus decipiens* Prov.**

Add. et Corr., p. 179, ♀; Ashm. Ent. Am., III, p. 74; Cress. Syn. Hym., p. 246.

♀. Length, 2.4^{mm}. Black, with the antennæ and legs, in part, testaceous. Head large, flat, very finely punctured, with a large ocellus on the vertex. Antennæ inserted near the mouth, 10-jointed, the first the longest and thickest, the following elongated, slender, the terminal joints dusky. Thorax polished, shining, narrow, elongated with respect to the constricted part of the scutellum. Abdomen subsessile, oval. Anterior femora strongly swollen, black, their tibiæ testaceous, their tarsi brownish, with the claws long, in the form of pincers; the four posterior femora with their tibiæ black, their tarsi testaceous.

HABITAT.—Cap Rouge, Canada.

Type ♀ in Coll. Abbé Provancher.

Unknown to me.

***Gonatopus californicus*, sp. nov.**

♀. Length, 3^{mm}. Uniformly piceous-brown, except the apex of the metathorax and the abdomen, which are more or less black. The antennæ, the tarsi, and the slender part of the posterior femora, and the middle of their tibiæ, honey-yellow. The head is very closely, finely punctulate, pubescent, while the metathorax is transversely rugulose.

HABITAT.—California.

Type ♀ in National Museum.

Described from a single specimen received from A. Koebele.

***Gonatopus bicolor*, sp. nov.**

♀. Length, 3^{mm}. Head, thorax and legs yellow or reddish-yellow; middle and posterior knees and tips of posterior tibiæ black. Abdomen piceous black. Mandibles 4-dentate. Eyes brown. Metathorax smooth, polished, the posterior face feebly transversely aciculated.

Antennæ subclavate, brown, the 4 or 5 basal joints yellow, the first flagellar joint about twice as long as the second.

HABITAT.—Selma, Ala.

Type ♀ in National Museum.

Described from a single specimen collected by Mr. W. H. Patton.

DRYINUS Latreille.

Hist. Nat., XIII, p. 228 (1805); Först. Hym. Stud., II, p. 90.

Chelothelius Reinh., Berl. Ent. Zeits., 1863, p. 409.

(Type *D. formicarius* Latr.)

Head transverse, the vertex impressed, when viewed from in front triangular; eyes large, prominent; ocelli 3 in a triangle.

Antennæ 10-jointed, filiform or slightly subclavate, inserted low down on the face, just above the clypeus; the scape about half the length of the head, slightly thickened and more than twice as long as the pedicel; the first flagellar joint usually greatly lengthened.

Maxillary palpi long, 6-jointed; labial palpi very short, 2-jointed.

Mandibles 3-dentate.

Thorax elongated; the prothorax very long, separated from the mesothorax by a strong constriction, above convex, anteriorly rounded; mesothorax broader than long, shorter than the prothorax, and usually without parapsidal furrows; the scutellum distinct; metathorax subquadrate, more or less rounded off posteriorly, rugose.

Front wings with a large stigma, two basal cells and an incomplete marginal cell.

Abdomen oblong oval or oblong ovate, petiolate, the second and third segments the largest, of which the second is the longer.

Legs long, the femora obclavate, the tibiæ long, slender, the anterior tarsi chelate; in ♂ anterior tarsi long, simple.

Only three species in this genus are known in our fauna, which may be recognized by the aid of the following table:

TABLE OF SPECIES.

FEMALES.

Not entirely brownish-yellow..... 2

Entirely brownish-yellow.

Wings with two fuscous bands..... *D. BIFASCIATUS*, Say.

Wings fuscous, with a large rounded hyaline spot beneath the stigma.

D. ALATUS, Cr.

2. Abdomen shining black.

Wings hyaline with two fuscous bands..... *D. AMERICANUS* Ashm.

D. bifasciatus Say.

Lec, Ed. Say's Works, I, p. 384, ♀; Ashm. Ent. Am., III, p. 74; Cress. Syn. Hym., p. 246.

Yellowish; wings bifasciate.

Inhabits Indiana.

Body honey-yellow, varied with blackish; anterior thighs dilated; wings with two fuscous bands, the apical one broader.

Length rather more than one-fifth of an inch. (Say.)

Unknown to me.

Dryinus alatus Cr.

Gonatopus ? alatus Cr., Trans. Am. Ent. Soc., IV, p. 193, ♀. *Dryinus alatus* Patton, Can. Ent., XI, p. 65; Ashm. Ent. Am., p. 246; Cress. Syn. Hym., p. 246.

♀. Length 5.75mm. Pale ferruginous, head shining, much broader than thorax, transversely compressed; front flat; eyes large, prominent, ovate; clypeus transverse, subconvex, bituberculate at tips; mandibles and scape beneath whitish; antennæ slender, as long as head and thorax, 10-jointed, first joint short and robust, second small, scarcely half the length of first, third very long and slender, more than twice

the length of first and second together, black; scape and two or three apical joints yellow; prothorax elongate, as long as metathorax, convex, subtruncate anteriorly, narrowed and somewhat contracted posteriorly; metathorax short, convex, fusco-ferruginous; metathorax elongate, rounded behind, longitudinally rugose at base above; wings narrow, scarcely reaching tips of posterior femora, fuscous, with a large rounded hyaline spot beneath base of stigma nearly as broad as the wing; legs rather paler than body, anterior pair very long; coxæ and trochanters as long as femora, which are longer than tibiæ, tarsi chelate; four posterior legs much shorter than anterior pair, all the femora much thickened towards base; abdomen elongate, smooth and shining. (*Cresson*.)

HABITAT.—Texas.

Types in Coll. American Ent. Soc. and National Museum.

The type specimen in the National Museum came with the Belfrage collection.

Dryinus americanus Ashm.

(Pl. v, Fig. 3, ♀.)

Mystrophorus americanus Ashm., Ent. Am., III, p. 128.

♀. Length 6.3^{mm}. Head, thorax, and legs brownish yellow; head above dusky; eyes brown-black; antennæ dusky at tips; abdomen smooth, polished, black. The head when viewed from in front is triangular, finely and regularly punctate, impressed above. Antennæ 10-jointed, the third joint as long as the fourth, fifth, and sixth joints united. Prothorax much elongated, narrower, and more than thrice as long as the mesonotum, finely microscopically sculptured. The short spoon-shaped wings are hyaline, except a smoky transverse band across the front wing, broad enough to inclose the stigma and stigmal vein.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Two specimens. The first specimen captured was in poor condition, and when my original description was drawn up the anterior chelate tarsus was not observed, and it was consequently placed in the genus *Mystrophorus*, which is distinguished by having the anterior tarsi simple, not chelate.

LABEO Haliday.

Ent. Mag., I, p. 273 (1833).

(Type *L. excisus* Westw.)

Head transverse, the vertex broad, subconvex, the occiput deeply concave; eyes large, oval, prominent, but much smaller than in either *Gonatopus* or *Dryinus*, and occupying only the anterior half of the sides; the cheeks oblique; ocelli 3, small, triangularly arranged; a delicate keel extends forward from the front ocellus.

Antennæ 10-jointed, filiform, inserted just above the clypeus, slightly thickened towards the tips; scape thickened, a little curved, about twice as long as the pedicel, or a little shorter, or as long as the first flagellar joint.

Maxillary palpi rather long, 4-jointed; labial palpi very short, 2-jointed.

Mandibles truncate at tips and 3-dentate, the outer two conical, equal; the inner smaller, blunt.

Thorax subovate; prothorax narrowed before and impressed at sides, scarcely as long as the mesonotum, the anterior margin ridged; mesonotum broader than long, with 2 distinct furrows converging posteriorly; metathorax short, rounded behind, scarcely sculptured or indistinctly areolated.

Front wings with a moderate sized lanceolate stigma, two basal cells, and an angulated stigmal vein; sometimes one or two discoidal cells are more or less visible, but usually they are wanting or subobsolete.

Abdomen subovate or oblong oval, petiolate, the second and third segments nearly equal.

Legs moderate; the hind pair the longest, femora obclavate, the tibiae subclavate, the tarsi usually long and slender.

I am strongly of the opinion that this genus, known only in the male sex, will yet prove to be the opposite sex of *Gonatopus*. It is reared from *Typhlocyba* and other jassids.

The four species in our fauna may be distinguished by the aid of the following table:

TABLE OF SPECIES.

Hind legs very long, the tibiae very long.

Hind tarsi longer than their tibiae.

Antennae very long, the flagellar joints nearly 5 times as long as thick.

Marginal cell open at tip..... L. LONGITARSIS, sp. nov.

Marginal cell completely closed..... L. TEXANUS, sp. nov.

Hind legs not especially long, the tibiae not long.

Antennae not longer than the thorax, the flagellar joints never more than 3 times as long as thick.

Pedicel and scape equal in length..... L. NASUTUS Ashm.

Pedicel twice as long as the scape..... L. TYPHLOCYBAE, sp. nov.

Labeo longitarsis sp. nov.

♂. Length 2.6^{mm}. Black, shining; head finely closely punctate, the occiput deeply emarginate; eyes large, rounded, pubescent. Mandibles and palpi rufous. Antennae 10-jointed, long, setaceous, pubescent; first and last flagellar joints about of an equal length, longer than the scape, the remaining slightly shorter, four times as long as thick. Prothorax scarcely visible from above; mesonotum with two distinct furrows, converging posteriorly; scutellum with a transverse impressed line at base; metathorax longer than high, roundedly truncate behind, finely closely punctate, and with a median carina. Wings hyaline, pubescent, the venation distinct, brown; the stigma long

lanceolate, the stigmal vein very long, forming nearly a closed marginal cell. Legs fuscous, the posterior pair unusually long.

HABITAT.—Jacksonville, Fla.

Type ♂ in Coll. Ashmead.

Labeo texanus sp. nov.

♂. Length 2.5^{mm}. Allied to *L. longitarsis*, but differs as follows: The head is more finely punctate; mandibles black or piceous; marginal cell in anterior wing completely closed; legs black, the anterior knees, tibiæ, and tarsi pale brownish; the middle and hind knees brownish; tibiæ and tarsi fuscous. The metathorax is more rugosely punctate.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen.

Labeo nasutus Ashm.

Embolemus nasutus Ashm., Ent. Am., III, p. 75 ♂.

♂. Length 2^{mm}. Black, subopaque. Head vertically short, the frons punctate; ocelli prominent; eyes large, convex, hairy; mandibles rufous; 3-dentate, the outer tooth a little the longest. Antennæ 10-jointed, brown-black, densely pubescent; the scape and the pedicel very short, together scarcely longer than the first flagellar joint; first flagellar joint the longest, about thrice as long as thick, the following nearly equal, about twice as long as thick. Prothorax scarcely visible from above, narrowed into a little neck anteriorly; mesonotum without distinct furrows, smooth; metathorax short, smooth, with a slight carina.

Abdomen subsessile, small, black, compressed along the venter.

Legs brown-black, the knees, tips of tibiæ, and the tarsi pale or yellowish.

Wings hyaline, the veins of the basal cells hyaline, scarcely distinguishable.

HABITAT.—Jacksonville, Fla.

Type ♂ in Coll. Ashmead.

Labeo typhlocybæ, sp. nov.

(Pl. v, Fig. 5, ♂.)

♂. Length 2.5^{mm}. Black, subopaque, shagreened, covered with a sparse whitish pubescence. Eyes densely pubescent. Mandibles and palpi yellowish. Antennæ and legs brown, except the anterior tibiæ and all the tarsi, which are yellowish. Antennæ 10-jointed, extending to the middle of the metathorax, very pubescent; the pedicel is more than twice as long as the scape; the first flagellar joint two-thirds the length of the pedicel; the fourth and fifth equal and a little longer than the first; remaining joints, except the last, subequal, the last a

little longer, pointed. Mesonotum with 2 furrows, converging and almost meeting at the base of the scutellum. Wings hyaline, the costa and stigma brown, the other veins pale.

HABITAT.—Washington, D. C.

Type ♂ in National Museum.

Reared by Dr. C. V. Riley, at Washington, D. C., July 23, 1883, from *Typhlocyba* sp. occurring on *Celtis* and elm.

PHORBAS Ashm., gen. nov.

(Type *P. laticeps* Ashm., ♂.)

Head broadly transverse, wider than the thorax, but not especially thick through antero-posteriorly, and when viewed from in front rounded; eyes oblong oval, pubescent; ocelli 3, triangularly arranged, neither especially small nor very close together.

Antennæ 10-jointed, thick, filiform, not longer than the thorax, pubescent, the scape only a little longer than the first flagellar joint.

Maxillary palpi 5-jointed.

Mandibles 3-dentate.

Thorax as in *Aphelopus*, but without distinct parapsidal furrows, the prothorax only slightly visible from above.

Front wings with a lanceolate stigma, two basal cells, and an open marginal cell.

Abdomen subpetiolate, oval.

Legs as in *Aphelopus*.

A genus described from a single male specimen, but the lanceolate stigma and 5-jointed maxillary palpi will, however, distinguish it from all other males, in the genera in which the males are known. There is a possibility that it may be the opposite sex of my genus *Bocchus*, as it agrees with it in maxillary, mandibular, and wing characters, but otherwise, in the shape of the head, thoracic, and abdominal characters, it is quite distinct. Of the other genera, it comes nearest to *Aphelopus*, but the widely transverse head, absence of parapsidal furrows, and the lanceolate stigma, sufficiently separate the two.

The single specimen, described below, was captured in Florida by sweeping.

Phorbas laticeps, sp. nov.

(Pl. v, Fig. 7, ♂.)

♂. Length 2^{mm}. Robust, black, subopaque, finely shagreened and sparsely pubescent. Head transverse, much wider than the thorax, the occiput very wide, not at all emarginate. Eyes prominent, oval, pubescent. Mandibles 3-dentate, rufous. Antennæ 10-jointed, extending to the tegulæ, pubescent, the scape longer than the first flagellar joint, the flagellar joints, except the penultimate, about of an equal length, twice as long as thick, the last pointed, the penultimate only 1½ times as long as thick. Mesonotum with two faint furrows; scutellum smooth,

impunctured, with a transverse furrow at base; metathorax very short, obliquely truncate behind. Wings hyaline, without pubescence, the stigma and veins white or hyaline. Legs fuscous, a dot on knees, anterior tibiæ and tarsi and middle and posterior tarsi, yellowish-white. Abdomen small, black, subcompressed.

HABITAT.—Jacksonville, Fla.

Type ♂ in Coll. Ashmead.

BOCCHUS Ashm., gen. nov.

(Type *B. flavicollis* Ashm., ♀.)

Head large, broad, shaped much as in *Dryinus*, but the vertex not impressed, the occiput very slightly concave; eyes large oval, prominent; ocelli small, close together in a triangle. Antennæ 10-jointed, subfiliform, very slightly thickened toward tips, inserted just above the clypeus, the scape longer than the first flagellar joint.

Maxillary palpi 4-jointed.

Mandibles 3-dentate, nearly equal, the inner tooth a little the smallest.

Thorax not much lengthened, much narrowed anteriorly and truncate posteriorly, the angles of the truncature rounded; the pronotum is almost as long as the mesonotum but much narrower, a little wider anteriorly than at base, only about half the width of the very broad head; mesonotum wider than long, with furrows; scutellum semicircular with a transverse furrow all across the base; metathorax much shorter than high, abruptly truncate.

Front wings with a lanceolate stigma, two basal cells, and an open marginal cell, the radius being long and curved.

Abdomen globose, distinctly petiolate, the petiole slender, cylindrical, as long as the hind coxæ.

Legs as in *Dryinus*, the anterior tarsi chelate, the fourth joint not much larger than the third.

This genus comes nearest to *Dryinus*, but is at once separated by the 4-jointed maxillary palpi, the difference in the shape of the prothorax, the globose abdomen, the relative length of the anterior tarsal joints, and by the vertex of the head not being impressed.

Only a single species is known, as follows:

Bocchus flavicollis, sp. nov.

(Pl. v. Fig. 6, ♀.)

♀. Length 3^{mm}. Black, closely, finely punctulate, the head and mesonotum tinged with brown. Head large, broad, subquadrate, not impressed on the vertex, a little narrowed behind the eyes; eyes large. Prothorax strongly contracted, yellow; two basal joints of antennæ, the legs and petiole pale rufous; flagellum subclavate, brown black. Antennæ 10-jointed, the pedicel about half the length of the first flagellar joint, the first being about as long as the scape, the remaining joints

shorter but thicker. The pronotum is much narrower than the mesonotum, although about as long; mesonotum with two furrows; scutellum bifoveated, the foveæ widely separated but connected by a transverse line; metathorax short, coarsely rugose, with some dorsal raised lines. Wings hyaline, with a fuscous band across the marginal cell two-thirds the width of wing, almost devoid of pubescence; stigma lanceolate; stigmal vein long curved; abdomen globose, black, petiolated, the petiole slender, rufous, as long as the hind coxæ, the second and third segments very large, equal, occupying nearly the whole surface, the following segments retracted.

HABITAT.—Marquette, Mich.

Type ♀ in Coll. Ashmead.

Described from a single specimen captured by Mr. E. A. Schwarz.

CHELOGYNUS Haliday.

Ent. Mag., 1, p. 273 (1833).

(Type *C. fuscicornis* Dalm.)

Head transverse, the vertex broad, convex; the cheeks oblique, the occiput not deeply concave, margined; ocelli 3 in a triangle, but widely separated; eyes oval, subprominent.

Antennæ inserted just above the clypeus, 10-jointed, the first flagellar joint scarcely as long as the scape, usually shorter, the following joints short, in ♂ the following joints lengthened.

Maxillary palpi 5-jointed.

Mandibles truncate at tips, 3- or 4-dentate; the teeth acute, slightly subequal, the inner tooth the smallest.

Thorax elongate; prothorax in ♀ as long, or nearly as long, as the mesonotum, subquadrate, obliquely impressed at sides, in ♂ very short; mesonotum usually with two distinct furrows or indicated anteriorly; metathorax long, rounded posteriorly.

Front wings with a large ovate or subovate stigma, two basal cells and a stigmal vein.

Abdomen subpetiolate, ovate, the second segment the largest, the others gradually subequal.

Legs of moderate length, the femora obclavate, stout, the anterior tarsi in the ♀ chelate.

The ovate stigma and the 5-jointed labial palpi sufficiently separate this genus from *Bocchus*; and these characters, in connection with the difference in the shape of the head and pronotum, and the differences to be pointed out in the chelæ distinguish it from *Dryinus*; while the longer pronotum, the 5-jointed maxillary palpi, and the differences in the relative length of the anterior tarsal joints and the chelæ can be depended upon to separate it from *Anteon*.

TABLE OF SPECIES.

FEMALES.

- Entirely black, the legs rufous..... 2
 Ferruginous, abdomen alone black.
 Wings hyaline, with a fuscous band beneath stigma.....C. ATRIVENTRIS Cr.
 2. Wings hyaline, with a fuscous band beneath the stigma.
 Clypeus rufous; mandibles rufous, 4-dentateC. HENSHAWI sp. nov.
 Clypeus black; mandibles white, 3-dentateC. CANADENSIS sp. nov.

Chelogynus atriventris Cress.

Dryinus atricentris Cr., Trans. Am. Ent. Soc., IV, p. 193, ♀; Ashm., Ent. Am., III, p. 74; Cr., Syn. Hym., p. 246.

♀. Length, 4.5^{mm}. Ferruginous, with pale glittering pubescence; head much broader than thorax; face, mandibles, and base of scape beneath, pale yellowish; tips of antennæ blackish; pleura with dense silvery pubescence; metathorax rugulose, posterior face depressed and transversely aciculated; wings hyaline, with a dusky band beneath stigma; posterior tibiæ blackish at tips, their tarsi pale; abdomen black, smooth, and polished.

HABITAT.—Texas.

Type ♀ in Coll. Amer. Ent. Soc.

Chelogynus Henshawii sp. nov.

♀. Length, 5^{mm}. Black, shining; head and prothorax finely rugose; mesonotum and scutellum smooth, polished; metathorax coarsely rugose. Antennæ and legs pale rufous; the 6 terminal joints of the antennæ fuscous, and the posterior femora towards apex above have a large black spot. The antennæ are 10-jointed, filiform, the first flagellar joint the longest, about one-third longer than the scape. Clypeus and mandibles rufous, the latter 4-dentate. Mesonotum with two sharply defined furrows. Tegulæ rufous. Wings hyaline, with two fuscous bands, one at the basal nervure, the other below the upper half of the stigma; veins pale brown. Anterior femora much swollen, the tarsi with large pincher-like claws, as long as the tibiæ, and fringed with stiff bristles on the inside.

HABITAT.—Milton, Mass.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from Mr. Saml. Henshaw. It is the only species I have seen with 4-dentate mandibles.

Chelogynus canadensis sp. nov.

(Pl. VI, Fig. 1, ♀.)

♀. Length, 2.5^{mm}. Black; head and collar very finely punctate, the mesonotum and scutellum smooth, the former with two furrows; metathorax rugose. Face sparsely covered with glittering silvery hairs. Mandibles and palpi white. Antennæ 10-jointed, brown, the first flagellar joint about half the length of the scape, the remaining

joints very little longer than thick. Wings clear hyaline, stigma brown, veins pale or hyaline. Legs pale rufous, the posterior coxæ blackish basally; the pinchers of the anterior feet very small.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

This species is described from a single specimen received from W. H. Harrington, and comes nearest to the European *C. fuscicornis* Dalm.

ANTEON Jurine.

Hymn., p. 302 (1807); Först., Hymn. Stud., 11, p. 93.

Heterolepis Nees, Mon., 11, p. 271.

(Type *A. Jurineanus* Latr.)

Head transverse, the vertex wide, convex or subconvex, the occiput slightly concave, margined; ocelli in a triangle; eyes ovate.

Antennæ inserted just above the clypeus, 10-jointed; in the ♀ subclavate, the first flagellar joint hardly one-third the length of the scape, the following joints short, the terminal joints thickened gradually; in ♂ filiform, pilose, or pubescent, the first flagellar as long or slightly longer than the scape, the following joints all lengthened, cylindrical.

Maxillary palpi 4-jointed; labial palpi very short, 2-jointed.

Mandibles truncate at tips, 3-dentate, the teeth acute, the outer slightly longer than the others.

Thorax subovate, the prothorax short, narrowed and margined anteriorly, the sides oblique, impressed; mesonotum usually smooth and without distinct furrows; metathorax at least as long as wide, rugose, rounded posteriorly.

Front wings with a large ovate stigma, two basal cells and a stigmal vein; other cells obliterated.

Abdomen ovate or oblong-oval, subpetiolate, the second segment the largest, the others gradually subequal.

Legs moderate, the femora swollen or obclavate, the anterior tarsi in ♀ chelate.

A genus usually confused with *Chelogygnus* and *Dryinus*, but quite distinct. It has not a particle of resemblance to *Dryinus*, except in the anterior tarsi being chelate. The shape of the head, the short collar, and ovate stigma in front wing, readily separate it from that genus. With *Chelogygnus*, however, there is a closer resemblance, but the pronotum is always much shorter, often only visible from above as a slight collar, while the maxillary palpi are 4-jointed. In *Chelogygnus* the pronotum is always as long, or nearly as long, as the mesonotum, while the maxillary palpi are 5-jointed.

The species are numerous, although nothing positively is known of their habits.

The following table will afford assistance in distinguishing our species:

TABLE OF SPECIES.

FEMALES.

- Wings hyaline, not banded 2
 Wings with a wide dusky band below the stigma.
 Head closely, densely punctate, opaque; mesonotum sparsely punctate; legs reddish-yellow, tarsi white..... A. UNIFASCIATUS, sp. nov.
2. All coxæ pale, except sometimes the hind coxæ..... 3
 All coxæ and femora black.
 Posterior tibiæ black, rest of the legs rufous.
 Head coarsely rugose; antennæ long, dull rufous, densely pilose; mesonotum with furrows ♂ A. RUGOSUS, sp. nov.
 Tibiæ and tarsi dull honey-yellow, the tibiæ more or less fuscous at the middle.
 Head finely, closely punctulate; antennæ dark brown, the scape and pedicel rufous; mesonotum without furrows ♀ A. TIBIALIS Say.
3. Hind coxæ black or at least basally.
 Legs rufous, mesonotal furrows indicated only anteriorly.
 Head and thorax shining, sparsely irregularly shagreened, the collar transversely rugulose; antennæ brown-black, the scape rufous. ♀
 A. POLITUS, sp. nov.
- Posterior femora black above, legs yellowish.
 Head and thorax shining, the head wrinkled, collar rugoso-punctate anteriorly; antennæ honey-yellow A. PALLIDICORNIS, sp. nov.
- Posterior femora and tibiæ embrowned.
 Head closely punctate, opaque, the thorax sparsely punctate, shining; antennæ long, brown, pilose, the scape rufous ♀ A. PUNCTICEPS, sp. nov.
- Hind coxæ black above toward base, rest of the legs rufous; mesonotal furrows not at all indicated.
 Head closely, finely punctate, opaque, collar rugulose anteriorly, mesonotum closely microscopically punctate ♀ A. MINUTUS, sp. nov.
- All coxæ pale, legs reddish-yellow.
 Mesonotum polished, the furrows slightly indicated anteriorly.
 Head finely closely punctate, subopaque, collar very short, rugulose at sides; antennæ as long as the body, pilose, the second and third joints shorter than the scape, the fourth and beyond as long as the scape. ♂
 A. POPENORI Ashm.

Anteon unifasciatus, sp. nov.

♀. Length 1.8^{mm}. Black, shining; the head opaque, closely, densely punctured; the meso- and pronotum more sparsely punctate, sparsely pubescent, the latter somewhat transversely rugulose anteriorly; metathorax rugose. Antennæ, mandibles, palpi and tegulæ reddish-yellow. Antennæ 10-jointed, a little thickened at tips, the scape 3½ times as long as the pedicel, the first flagellar joint a little shorter than the pedicel, the second and third nearly equal, much shorter than the first, the remaining joints all longer and stouter. Wings hyaline, with a broad dusky band across the stigmal region of the wing, the venation pale or hyaline, the large stigma brown.

HABITAT.—Biscayne Bay, Florida.

Type ♀ in National Museum.

Described from a single specimen taken by E. A. Schwarz.

Anteon rugosus, sp. nov.

♂. Length, 4.3^{mm}. Head and thorax, except the disk of mesonotum and scutellum, very coarsely rugose, the mesonotum and scutellum sparsely but coarsely punctate; head very large and thick, the face with silvery white hairs; mandibles, scape, tips of anterior femora, their tibiae and tarsi, ferruginous; rest of legs, except the tarsi, black; flagellum brown-black, very pilose; wings hyaline, the stigma large, brown-black, with a pale spot at base; nervures distinct but pale. Abdomen very narrow, small, polished, black, subcompressed. Antennae 10-jointed, as long as the head and thorax united, tapering toward tips, the flagellar joints nearly equal in length, four or more times longer than thick, the scape thicker and a little longer than the first flagellar joint.

HABITAT.—Illinois.

Type in Coll. Ashmead.

Described from a single specimen.

Anteon tibialis Say.

Bost. Jour., 1, p. 284; Lec, Ed. Say's Works, II, p. 730; Ashm. Ent. Am., III, p. 74; Cress. Syn. Hym. p. 246.

♂. Length, 3^{mm}. Black, shining; head and prothorax finely punctured; mesonotum smooth, without furrows; metathorax rugoso-punctate with some elevated lines toward base. Antennae 10-jointed, fuscous, covered with a short pubescence, the scape and pedicel dull yellow; flagellum subclavate, brown, the joints after the first less than twice as long as thick. Wings hyaline, the stigma brown, the nervures hyaline, subobsolete, the stigmal vein very short, scarcely half the length of the stigma. Legs black, extreme tips of the femora and tibiae and tarsi dull honey-yellow.

HABITAT.—Indiana and District of Columbia.

The specimen from which this description is drawn up was taken by Mr. Schwarz, and agrees exactly with Say's description.

Anteon politus, sp. nov.

(Pl. VI, Fig. 2, ♀.)

♀. Length, 2.6^{mm}. Polished black; head, collar, and mesopleura irregularly microscopically shagreened; metathorax rather coarsely rugose; collar distinct, less than half the length of the mesonotum; mesonotum with furrows indicated only anteriorly; legs (except the posterior coxae, which are black basally, and the posterior tibiae and tarsi, which are fuscous) rufous. Antennae 10-jointed, reaching only a little beyond the tegulae, brown-black, the scape rufous; flagellar joints only a little longer than thick. Wings hyaline, the stigma large, brown, the nervures distinct pale yellow, the stigmal vein about as long as the stigma. Abdomen ovate, subpetiolate, polished black, depressed, not quite as long as the thorax.

HABITAT.—Toronto, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Anteon pallidicornis* sp. nov.**

♀. Length, 1.5^{mm}. Black, shining; head large, broad, finely shagreened; collar, mesopleura, and metathorax rugose; legs yellowish, posterior coxæ, their femora, above and beneath, and tips of their tibiæ black or fuscous. Antennæ 10-jointed, rather short, entirely honey-yellow, the flagellum a little thickened toward tip; first flagellar joint about one-third longer than the pedicel, the two following subequal, joints 4 to 7 stouter, scarcely longer than thick, the last ovate, nearly twice as long as the penultimate. Mesonotum and scutellum polished, impunctured, the mesonotal furrows not extended through to the scutellum. Wings hyaline, the stigma brown, the nervures yellowish, distinct. Abdomen ovate, depressed, polished black, much narrower, but as long as the thorax.

HABITAT.—Utah Lake, Utah.

Type in Coll. Ashmead.

Described from a single specimen given to me by Mr. E. A. Schwarz.

***Anteon puncticeps* sp. nov.**

♂. Length, 1.75^{mm}. Black, closely punctate, the disk of the mesonotum and the scutellum polished, impunctate; head rather coarsely punctate; mandibles, palpi, scape, and anterior and middle legs, pale or brownish-yellow; posterior legs dark brown, the trochanters, knees, and tarsi pale; middle tibiæ a little dusky towards tip above. Antennæ 10-jointed, the flagellum brown, pilose; the scape is three times as long as the pedicel; first flagellar joint very slightly shorter than the following, the following joints being 3 times as long as thick. Parapsidal furrows only indicated anteriorly. Mesopleura and metathorax rugose. Wings hyaline, the stigma pale brownish-yellow, the nervures distinct but pale; the stigmal nervure is a little longer than the stigma, angularly bent before the tip.

HABITAT.—Arlington, Va., and Vancouver Island.

Types in Coll. Ashmead.

Two specimens. The specimen from Vancouver was obtained through the collector, Mr. H. F. Wickham, the other was taken by myself at Arlington, Va.

***Anteon minutus* sp. nov.**

♀. Length, 1.2^{mm}. Black, shining; the head and thorax with a close, delicate punctuation; the scutellum smooth, highly polished. Antennæ and legs brownish-yellow, the former dusky toward tips;

posterior coxæ above, the middle tibiæ above, and the posterior femora and tibiæ above, more or less piceous. Antennæ 10-jointed, reaching to the tip of metathorax, incrassated toward the tips, the terminal joint twice as long as the penultimate; the pedicel stouter but not longer than the first flagellar joint, the joints beyond submoniliform. The collar is about one-third the length of the mesonotum, above finely, transversely rugulose; mesonotum without furrows; scutellum smooth, polished, with a row of punctures surrounding the posterior margin; metathorax finely rugose. Wings hyaline, the veins pale, the stigma large, brown, with a pale spot at base, the stigmal vein short. Abdomen small, ovate, subpetiolate, smooth and shining, about as long as the thorax, excluding the collar.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen given to me by E. A. Schwarz. The species is the smallest known, and could easily be mistaken for a small *Aphelopus*.

Anteon Popenoei Ashm.

Dryinus Popenoei Ashm., Bull. No. 3, Kans. Exper. Sta., App., p. 1, June, 1888.

♂. Length, 2^{mm}. Black; head subopaque, microscopically punctuate; thorax and abdomen polished, black; metathorax and mesopleura finely rugose; the superior edge of the truncature in the former margined. Clypeus anteriorly arcuate, smooth. Mandibles 4-dentate, pale brown. Antennæ 10-jointed, brown, with sparse, long, white hairs; pedicel small, half the length of the scape; first flagellar joint longer, but shorter than the fourth; fourth joint and those beyond, except the last, nearly equal, about as long as the scape. Wings hyaline, the stigma large, pale-brown, the stigmal vein short. Legs, including coxæ, reddish-yellow.

HABITAT.—Riley County, Kansas.

Type in Kansas State Agricultural College.

MYSTROPHORUS Förster.

Hym. Stud., II, p. 91 (1856); Ruthe, Berl. Ent. Zeits., 1859, p. 120.

(Type *M. formicaformis* Ruthe.)

Head large, broad, subquadrate, nearly twice broader than the thorax, the occiput not emarginate; ocelli 3, triangularly arranged; eyes oval.

Antennæ in both sexes 10-jointed, in ♀ subclavate, the pedicel small, the first flagellar joint a little longer and slenderer than the scape, the following shorter.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles truncate at tips, with 3 nearly equal, acute teeth.

Thorax elongate; the prothorax nearly twice as long as the mesothorax; mesonotum short, semicircular, without furrows, the scutellum small; metathorax large, longer than the prothorax, not areolated.

Front wings in ♂ short, spoon-shaped, with two basal cells, a stigma, and a stigmal vein; ♀ apterous.

Abdomen short, ovate.

Legs as in *Aphelopus*.

A peculiar little genus, closely allied to *Aphelopus*, but readily distinguished by the long and broad prothorax and the absence of mesonotal furrows. The genus is unknown in our fauna.

APHELOPUS Dalman.

Anal. Ent., pp. 8-14 (1823); Förster Hym. Stud., II, p. 91.

(Type *A. melaleucus* Dalm.)

Head transverse, wider than the thorax, the vertex broad, convex, the occiput slightly emarginate; eyes large, oval, hairy; ocelli 3 in a triangle, but widely separated, the lateral ocelli nearer the margin of the eye than to each other.

Antennæ inserted just above the clypeus, 10-jointed, in ♀ shorter than in the ♂, subclavate, the scape very short, scarcely longer than the second, the others variable in length, in ♂ filiform, hairy, the scape usually longer than the third, the last joint sometimes thickened.

Maxillary palpi long, 5-jointed; labial palpi short, 2-jointed.

Mandibles truncate at tips, with 3 small teeth.

Thorax ovoid; the prothorax not or scarcely visible from above; mesonotum as broad as long, convex, without furrows; metathorax not longer than high, rounded posteriorly.

Front wings with a large oval stigma, a short stigmal vein and two basal cells, which are often subobliterated on account of the paleness of the nervures.

Legs moderate, the femora not obclavate, the tarsi simple in both sexes.

TABLE OF SPECIES.

- | | |
|---|--------------------------------|
| Head, thorax, and abdomen black, the head sometimes maculate | 2 |
| Head and thorax black, the abdomen rufous. | |
| Antennæ and legs yellow ♀ | <i>A. RUFIVENTRIS</i> sp. nov. |
| 2. Head with white or yellow marks anteriorly | 3 |
| Head entirely black. | |
| Clypeus subtriangular. | |
| Legs honey-yellow; antennæ nearly as long as the body, brown, pilose, the scape yellow ♂ | <i>A. AMERICANUS</i> Ashm. |
| Clypeus truncate. | |
| Legs dull rufous, the posterior femora and tibiæ fuscous or black; antennæ much shorter than the body, black, pilose ♂. | <i>A. MELALEUCUS</i> Dalm. |

3. Head anteriorly from a little above the insertion of the antennæ and including the lower part of cheeks, the clypeus, mandibles, and palpi white.

Clypeus anteriorly truncate.

Anterior and middle legs white, sometimes the middle femora fuscous, posterior legs fuscous, with sometimes most of the coxæ, trochanters and base of the femora white ♀ *A. MELALEUCTUS* Dalm.

Clypeus anteriorly slightly emarginate at the middle.

Pronotum and all legs, except the apical half of posterior femora and their tibiæ, white ♀ *A. ALBOPICTUS* sp. nov.

- Head anteriorly from a little above the insertion of the antennæ and including the lower part of the cheeks, clypeus, and mandibles, pale brownish yellow; palpi white.

Clypeus anteriorly arcuate.

Legs honey-yellow, the posterior tibiæ fuscous ♀ *A. AFFINIS* sp. nov.

***Aphelopus rufiventris* sp. nov.**

♀. Length, 2 mm. Head and thorax black, minutely punctate; abdomen rufous; antennæ and legs honey-yellow. Antennæ 10-jointed, short, the flagellum subclavate; scape stout, as long as the pedicel and first flagellar joint united; first flagellar joint scarcely as long as the pedicel, joints 2 and 3 subequal, those beyond scarcely as long as thick. Mesonotum with furrows indicated only anteriorly. Wings hyaline, the nervures, excepting the stigmal, obsolete; stigma very large, pale brown, the stigmal vein very short, oblique, only about one-third as long as the stigma. Metathorax rounded off posteriorly, rather coarsely rugose. Abdomen oblong-oval, much narrower than the thorax, but fully as long, rufous.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

A species readily distinguished by the color of the abdomen, the antennæ, and the venation of anterior wings.

***Aphelopus americanus* Ashm.**

Ent. Am., III, p. 74, ♂; Cress., Syn. Hym., p. 247.

♂. Length, 1.5 mm. Black, subopaque, finely punctate, and covered with a fine whitish pubescence; mesonotum and scutellum smooth, polished, with only a few faint widely separated punctures; clypeus subtriangular. Antennæ 10-jointed, long, reaching to the middle of the abdomen, the scape brownish-yellow, the flagellum brown, covered with a short, dense pubescence, the joints of the flagellum three times as long as thick. Mesonotum with 2 faint furrows. Wings hyaline, the stigma large brown, the other nervures very pale, or hyaline, the stigmal vein being as long as the stigma. Legs honey-yellow, the posterior femora and tibiæ fuscous or black. Abdomen very small, black, shining.

HABITAT.—Jacksonville, Fla.

Type ♂ in Coll. Ashmead.

Aphelopus melaleucus Dalman.

(Pl. VI, Fig. 3, ♀.)

Gonatopus melaleucus Dalm., Sv. Ak. Handl., 1818, p. 82 ♀; Dalm., An. Ent., p. 14.*Dryinus atratus* Dalm. loc. cit., p. 15.*Aphelopus melaleucus* Nees., Mon., II, p. 388, ♀; Walk., Ent. Mag., IV, p. 427, pl. XVI, fig. 3 ♀.*Aphelopus atratus* Nees., Mon., II, p. 389 ♂.*Aphelopus melaleucus* Thoms., Öfv., 1860, p. 179, ♂ ♀; Marsh., Cat. Brit. Hym., p. 7.

♀. Length, 1.8^{mm}. Black; anterior orbits, face below the eyes, clypeus, except sometimes a central line, mandibles and anterior coxæ and legs, white; middle legs, honey-yellow; posterior legs, except a spot beneath the coxæ and the trochanters, usually brown or piceous; antennæ brown, the flagellum a little thickened towards the tip, the first four joints nearly equal, the three following stouter, but much shorter, the last joint nearly twice as long as the preceding.

♂. Length, 1.5^{mm}. In this sex the clypeus and the mandibles are white, the legs brown or fuscous, the apical half of anterior femora, their tibiæ and tarsi, honey-yellow or whitish; the other legs are also sometimes varied with yellow.

HABITAT.—Europe, Canada.

This European species is recognized in our fauna from a single female, taken at Ottawa, Canada, by Mr. W. H. Harrington. Monsieur Alfred Giard has bred it in France, from *Typhlocyba hippocastani* and *T. douglasi*, and has given a most interesting account of its habits, in the Comptes Rendus des Séances de l'Académie des Sciences for 1889.

Aphelopus albopictus sp. nov.

♀. Length, 1.5^{mm}. Black, shining, the head alone finely, closely punctulate, subopaque; face below the front ocellus, clypeus, mandibles, lower part of cheeks, palpi, anterior and middle legs, pronotum to the tegulæ, and the propectus, white or yellowish-white; posterior legs embrowned, the coxæ, trochanters and base of femora and tibiæ, white; clypeus anteriorly slightly emarginate at the middle. Head large, subquadrate, with a slight carina between the antennæ. Antennæ 10-jointed, dark brown, slightly thickened toward tips, densely pubescent; the first flagellar joint is a little longer than the short scape, the former the stouter; joints 4, 5, and 6 slightly longer than the first, the seventh, eighth, and ninth shorter, only a little longer than wide, the tenth about twice as long as the penultimate. Mesonotum with the furrows indicated only anteriorly. Metathorax rugose, obliquely rounded off posteriorly. Abdomen very small, compressed, about half the length of the thorax, polished, black. Wings hyaline, the nervures, except the large brown stigma, very pale and indistinct, or subobsolete; stigmal nervure as long as the stigma, slightly arcuate.

HABITAT.—Washington, D. C., and Bladensburg, Md.

Types in Coll. Ashmead.

Two specimens, both captured by Mr. E. A. Schwarz. The species comes nearest to *A. melaleucus*, but shows more white, has a different shaped clypeus and with the joints of the antennæ relatively different.

***Aphelopus affinis*, sp. nov.**

♀. Length, 2.2^{mm}. Black, shining; head and thorax very minutely punctate, metathorax rugulose; face from the frons, including the clypeus and mandibles, ferruginous; clypeus anteriorly rounded; antennæ brown; legs (except the posterior tibiæ, which are fuscous), entirely honey-yellow. Antennæ 10-jointed, a little thickened toward tips, the scape not longer than the first flagellar joint, flagellar joints 1 to 3 about three times as long as thick, the following to the last about twice as long as thick, the last much longer and thicker than any of the others. Wings hyaline, the stigma and stigmal vein brown, the other nervures hyaline, subobsolete; the stigmal vein is arcuate and a little longer than the stigma. Abdomen as long as the thorax, strongly compressed.

HABITAT.—Canada.

Type ♀ in Coll. Ashmead.

Described from a single specimen.

Subfamily IV.—CERAPHRONINÆ.

Head transverse, when viewed from in front oval, rounded, or oblong. Ocelli 3 in a triangle, rarely wanting. Mandibles oblong, bidentate at tips. Antennæ elbowed, inserted at base of the clypeus; in males 11-jointed (in a single case 10-jointed), filiform, dentate or subramose; in females 9-, 10-, or 11-jointed, filiform or clavate. Maxillary palpi 4- or 5-jointed; labial palpi 2- or 3-jointed. Pronotum short, visible from above only as a transverse line; mesonotum large, transverse, rarely without grooved lines, usually with 1, 2, or 3 grooved lines; scutellum large, convex or subconvex, the axillæ distinct; metathorax very short, rounded behind, the angles slightly prominent. Front wings with a large stigmated, or linear, marginal vein, a radial nervure, a more or less distinct basal cell, and always without a postmarginal nervure; hind wings simple, rather broad at base, and entirely veinless. Apterous forms frequent. Abdomen subsessile, ovate, composed of 8 segments, the second occupying about half its surface, striated at base. Legs moderate, the posterior femora the stoutest, the tibial spurs 1, 1, 1, the anterior spur large, divided into two prongs, the middle and posterior spurs weak, short; tarsi 5-jointed, the claws small, simple.

A somewhat extensive and widely distributed group, more closely allied to the three preceding subfamilies than to those that follow, except possibly the tribe Telenomini, in the Scelioninæ, but with quite a different habitus; the hind wings are never lobed, the anterior wings with a wholly different venation, while the structure of the thorax and

abdomen is quite distinct. The non-lobed hind wings, venation, different antennæ, and shape of mandibles, at once separate the species in this group from the Bethylinæ, Emboleminæ, and the Dryininæ; while from the only two groups that follow, with which they would likely be confused—the Scelioninæ and the Platygasterinæ, which like themselves have non-lobed hind wings and the antennæ inserted close to the mouth—they may be readily distinguished by the widely different antennæ, the shape of the head, venation, and non-carinated abdomen.

If we accept the published records as accurate, this group has great diversity of habits.

Ratzeburg has recorded *Megaspilus* sp. from a bombycid, a syrphid, two cecidomyiids, a *Chermes*, a scolytid and a tortricid; *Ceraphron* species from a tineid, a *Tomicus*, a *Curculio* and a *Brachonyx*; and a *Lygocerus* from a cynipid. Unquestionably, so far as the hosts are concerned, some of these records are inaccurate. The records in this country and others published abroad, show the group attacks almost exclusively the homopterous family *Aphididæ*, and the dipterous family *Cecidomyiidæ*. All reared by me, as well as those reared by Dr. Riley, except in a single instance (the rearing of a *Lygocerus*, by Dr. Riley, from a tortricid, *Sarothripa rawayana*, which is of questionable accuracy) have been from Aphids and Cecidomyiids. It is not improbable, therefore, that a parasitized Aphid was on the same leaf when the Lepidopteron was placed in the breeding jar.

Some such explanation may also account for the rearing of these insects by Ratzeburg from Lepidoptera, and his rearings from Coleoptera may be accounted for by the supposition that they were accompanied by inquilinous Dipterous larvæ.

To accept without question such diversity of habits in the genera of this group it seems to me would be unscientific.

The group seems to divide naturally into two tribes distinguished as follows:

Marginal vein stigmated; antennæ, with the same number of joints in both sexes, 11-jointed	Tribe I.—MEGASPILINI
Marginal vein linear, never stigmated; antennæ with a less number of joints in the females than in the males; males with 10- or 11-jointed antennæ; females 9- or 10-jointed	Tribe II.—CERAPHRONINI

Tribe I.—MEGASPILINI.

The genera in this tribe are not numerous and may be tabulated as follows:

TABLE OF GENERA.

FEMALES.

1. Mesonotum without or with 1 or 2 impressed lines	2
Mesonotum with 3 impressed lines.	
Metathorax with a forked spine at base	HABROPELTE Thoms.

Metathorax not spined at base.

With wings.

Wings bare, without cilia *TRICHOSTERESIS* Förster

Wings pubescent, with cilia.

Eyes usually bare; mesonotum not narrowed anteriorly.

LYGOCERUS Förster

Eyes pubescent; mesonotum narrowed anteriorly... *MEGASPILUS* Westw.

Wingless.

Maxillary palpi 5-jointed; labial 3-jointed; thorax not much narrowed.

MEGASPILUS Westw.

Maxillary palpi 4-jointed; labial 2-jointed; thorax much narrowed.

EUMEGASPILUS Ashm.

2. Mesonotum with 2 impressed lines; apterous..... *DICHOGMUS* Thoms.

Mesonotum with 1 impressed line; apterous.

Eyes small; ocelli wanting *LAGYNODES* Förster

Eyes large; ocelli present; winged..... *ATRITOMUS* Förster

Mesonotum without furrows; subapterous.

Eyes large, bare; ocelli distinct *ATRITOMUS* Förster

MALES.

1. Mesonotum without impressed lines..... 2

Mesonotum with 3 impressed lines.

Metathorax with a forked spine at base *HABROPELTE* Thoms.

Metathorax without a forked spine at base.

Wings bare, without cilia *TRICHOSTERESIS* Förster

Wings pubescent, with cilia.

Antennæ dentate or ramose *LYGOCERUS* Förster

Antennæ simple, filiform.

Maxillary palpi 5-jointed; labial palpi 3-jointed.... *MEGASPILUS* Westw.

Wingless.

Maxillary palpi 4-jointed; labial palpi 2-jointed... *EUMEGASPILUS* Ashm.

Mesonotum with 1 impressed line (*Atritonus*).

2. Antennæ toothed or serrate..... *ATRITOMUS* Förster

Antennæ with 5 long branches, a branch on each of the first five flagellar joints,

*DENDROCERUS*¹ Ratzb.

HABROPELTE Thomson.

Öfv., 1858, p. 288.

Megaepilodes Ashm., Can. Ent., xx, p. 48 (1888).

(Type *H. tibialis* Boh.)

Head transverse, the face not greatly lengthened, occiput margined; ocelli 3, triangularly arranged; eyes oval, hairy.

Antennæ inserted just above the clypeus, long, filiform, 11-jointed in both sexes, the scape scarcely as long as the first flagellar joint, pedicel very small, hardly longer than wide, the flagellar joints lengthened, equal or very gradually subequal.

¹ This genus is unknown to me, and in the preparation of this work was at first overlooked. It was described and figured by Ratz. in Die Ichn. d. Forstins., Band 3, p. 181 (1852), where a full description of the male, the only sex known, is given. While apparently closely allied to *Lygocerus*, I believe it to be distinct.

Maxillary palpi 5-jointed; labial palpi 3-jointed.

Mandibles bidentate at tips.

Thorax subovate, the prothorax not visible from above, contracted into a little neck at the junction with the head; mesonotum subdepressed, with 3 furrows; scutellum large, subconvex, longer than wide, rounded posteriorly and with a distinct frenum; metathorax short, slightly emarginate, with 2 teeth at base.

Front wings with a large, oval stigma, a parastigma and a curved stigmal vein.

Abdomen subsessile, ovate, subconvex above, convex beneath, the second segment occupying fully two-thirds of the whole surface, longitudinally striated, the following segments very short, the last pointed.

Legs moderate, pilose, the femora slightly swollen, the posterior pair the thickest, tibiae subclavate, the tibial spurs not very well developed, tarsi shorter than their tibiae.

The genus is distinguished from other genera with 3 mesonotal furrows, by the 2 erect teeth or spines at the base of the metathorax, the larger flattened scutellum, and the longer, denser pilosity of the legs.

Two closely allied species are known in our fauna, separable as follows:

FEMALES.

Legs black, base and tips of tibiae and the tarsi, dark rufous.

Antennae, except sometimes the first 2 flagellar joints, black; the first flagellar joint thrice as long as the pedicel; axillae separated from the scutellum by 5 large punctures.....H. ARMATUS Say

Legs black, trochanters, bases, and tips of femora, tibiae except at the middle and tarsi, rufous.

Antennae black, the scape, pedicel and first 2 flagellar joints, rufous; the first flagellar joint less than thrice as long as the pedicel; axillae separated from the scutellum by 8 punctures.....H. FUSCIPENNIS Ashm.

MALES.

Axillae separated from the scutellum by 5 large punctures.

First flagellar joint a little longer than the scape; last joint of palpi nearly twice as long as the fourth.....H. ARMATUS Say

Axillae separated from the scutellum by 8 punctures.

First flagellar joint not longer than the scape; last joint of palpi not one-half longer than the fourth.....H. FUSCIPENNIS Ashm.

H. fuscipennis Ashm.

Megaspilodes fuscipennis Ashm., Bull. 3, Kans. Exp. Sta. App., p. 11, 1888.

♂ ♀. Length, 3.5^{mm}. Shining black, pilose; head and thorax anteriorly rugose, rest of the thorax smooth, the face with a narrow, smooth space in front of the ocelli, antennal depression absent. Maxillary palpi long, the last joint 1½ times longer than the fourth. Antennae 11-jointed, in ♀ incrassated toward tips, the scape long, obclavate; the

scape, pedicel, and first two flagellar joints are brownish-yellow, the first flagellar joint more than twice as long as the pedicel; in ♂ filiform; the scape is equal in length with the first flagellar joint, the following joints slightly shorter, all black or dark fuscous, about 5 times as long as thick; last joint of palpi one-half longer than the fourth. Prothorax very short, narrower than the mesothorax and below the dorsal line depressed and produced into a slight neck. Mesothorax truncate before, with 3 coarsely punctate furrows. Scutellum with a punctate frenum. Axillæ separated from the scutellum by about 8 punctures. Metathorax armed in the middle, behind the scutellum, with two blunt teeth or spines. Wings fusco-hyaline, darker beneath the stigma, the stigmal vein about twice as long as the stigma; both brownish-black. Legs dark rufous or reddish-brown, the coxæ and femora black, with sometimes the tibiæ black or dusky. Abdomen with coarse longitudinal striæ to near the apex of the second segment.

HABITAT.—Washington, D. C.; Arlington, Va; Manhattan, Kans., and Wyoming.

Types in Coll. Ashmead and Kansas State Agricultural College.

Described from several specimens.

***Habropelte armatus* Say.**

(Pl. VI, Fig. 4, ♂.)

Ceraphron armatus Say, Bost. Jour., I, p. 276; Lec. Ed., Say, II, p. 724.

Lygocerus armatus Ashm., Ent. Am., III, p. 98.

Ceraphron armatus Cress. Syn., Hym., p. 248.

Megaspilodes armatus Ashm., Bull. 3, Kans. Exp. Sta., II, 1888.

Telenomus stygius Prov. Add. et. Corr., p. 189.

♂ ♀. Length, 3.4 to 3.8^{mm}. Much like *fuscipennis*, but may readily be separated by the following differences: The ♀ antennæ are usually black, except sometimes the first two flagellar joints, which are pale brownish, or at least beneath, the first flagellar joint being thrice as long as the pedicel; in the ♂ the first flagellar joint is a little longer than the scape; while the axillæ are separated from the scutellum by five large punctures, which is a constant character in both sexes. In the ♂ the last joint of the palpi is nearly twice as long as the fourth. The legs in both species are variable in color, exhibiting more red in some specimens than in others.

HABITAT.—Indiana and Arlington, Va.

Types in Coll. Ashmead.

Either one of these species could be used as typical of Say's species; but as Say's type is no longer in existence it devolves upon me to designate which should be known as the type, his description not being sufficiently definite to decide, and I have, therefore, separated them as above.

TRICHOSTERESIS Förster.

Hym. Stud., II, p. 97 (1856).

Thliboneura Thoms., Öfv., 1858.(Type *T. glabra* Boh.)

Head transverse, the face, seen from before, not longer than wide, the occiput margined; ocelli 3 in a curved line; eyes broadly oval, not hairy.

Antennæ inserted just above the clypeus, 11-jointed, subfiliform, the scape 3 or 4 times as long as the first funicular joint, the pedicel longer than thick, the joints beyond the third short.

Maxillary palpi 5-jointed; labial palpi 3-jointed.

Mandibles bidentate.

Thorax ovoid, the prothorax not visible from above; mesonotum not or scarcely narrowed anteriorly, with 3 distinct impressed lines; scutellum large, subconvex, longer than wide, rounded posteriorly; metathorax short, rounded posteriorly, unarmed, the spiracles large, orbicular.

Front wings entirely bare, without pubescence, with a large oval stigma and a short, almost straight, stigmal vein, which is usually shorter than the stigma; no parastigma.

Abdomen ovate, smooth, the second segment the largest, occupying about half the length of the abdomen.

Legs not pilose.

The non-pubescent wings will distinguish the genus from *Lygocerus* and *Megaspilus*, with which it is most closely allied.

Only one species, closely resembling the European *T. glaber* Boheman, is known in our fauna.

Trichosteresis floridanus Ashm.

(Pl. VI, Fig. 5, ♀.)

Ent. Am. III, p. 98; Cress. Syn. Hym, p. 313.

♀. Length 2.5^{mm}. Black, shining, finely alutaceous. Antennæ 11-jointed, dark-brown, the first flagellar joint a little longer than the pedicel, the following joints, except the last, scarcely longer than thick, the last conic. Legs piceous black, the trochanters, knees, tips of tibiæ, and the tarsi dark honey-yellow or reddish. Wings clear hyaline, without pubescence, the stigma large, semicircular, brown, the stigmal vein not quite as long as the stigma.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

LYGOCERUS Förster.

Hym. Stud., II, p. 97 (1856).

Ceraphron Thoms., Öfv. 1858, p. 287.(Type *L. ramicornis* Boh.)

Head transverse, seen from before, the face broader than long, the

occiput faintly margined; ocelli 3, arranged nearly in a straight line; eyes large, oval, smooth, or but faintly pubescent.

Antennæ inserted just above the clypeus, 11-jointed in both sexes, the scape long, extending above the ocelli; in ♀ subfiliform, the joints of flagellum only slightly longer than thick; in ♂ some of the flagellar joints always dentate or with short hairy branches.

Maxillary palpi 5-jointed; labial palpi 3-jointed.

Mandibles bidentate.

Thorax ovoid, the prothorax not visible from above; mesonotum not narrowed anteriorly, with 3 impressed lines; scutellum large, longer than wide, subconvex, without a distinct frenum; metathorax very short, rounded posteriorly.

Front wings pubescent, with a large oval or semicircular stigma, and a slightly arcuate stigmal vein, distinctly longer than the stigma.

Abdomen ovate, smooth, subpetiolate, the second segment the longest, not striate at base.

Legs finely pubescent, but not pilose, the last joint of posterior tarsi not longer than the second.

A genus parasitic principally on aphids, and probably universally distributed.

The males are readily separated from those in *Megaspilus*, and in the other genera in the tribe having 3 mesonotal furrows, by the ramose or serrate antennæ, while the females are separated with difficulty; the non-pubescent or but slightly pubescent eyes, the mesonotum being as wide anteriorly as posteriorly, and the lateral mesonotal furrows, before reaching the anterior margin, curving somewhat obliquely toward the anterior angles, will, however, at once distinguish them.

Our species are not numerous, and may be separated by the aid of the following table, except possibly *L. triticum* Taylor, which at one time I considered to be identical with *L. (Megaspilus) niger* Howard, but which I now consider distinct, Miss Taylor's figure of the male antennæ of her species being wholly different from that of Mr. Howard's species:

TABLE OF SPECIES.

FEMALES.

Legs, including coxæ, uniformly reddish-yellow..... *L. FLORIDANUS* Ashm.

Posterior coxæ black; legs pale brownish.

Antennæ black, scape pale brownish beneath; first flagellar joint as long as the pedicel *L. PICIPES*, sp. nov.

All coxæ black.

Legs black, tibiae piceous, knees, anterior tibiae, and all tarsi, honey-yellow.

Antennæ wholly black; first flagellar joint not quite as long as the pedicel.

L. STIGMATUS Say.

Legs black or piceous, the tibiae, and tarsi brownish-yellow.

Mesopleura almost smooth; antennæ black, the first flagellar joint much longer than the pedicel..... *L. NIGER* How.

Legs brownish-yellow.

Mesopleura smooth polished; antennæ black, the first flagellar joint not longer than pedicel.....L. 6-DENTATUS, sp. nov.

Mesopleura shagreened; first flagellar joint much longer than pedicel.
L. PACIFICUS, sp. nov.

MALES.

Antennæ ramose.

Flagellar joints 1 to 7 ramose; legs uniformly reddish-yellow.
L. FLORIDANUS Ashm.
Flagellar joints 1 to 4 ramose.....L. TRITICUM Taylor.

Antennæ serrate, black.

Flagellar joints 1 to 5 dentate; first flagellar joint twice as long as thick.
L. STIGMATUS Say.

Flagellar joints 1 to 5 dentate; first flagellar joint scarcely twice as long as thick.
Coxæ black, the legs brown, with the anterior tibiae and all tarsi honey-yellow.

Stigmal vein $1\frac{1}{2}$ times as long as the stigma.....L. 6-DENTATUS, sp. nov.

Stigmal vein not longer than the stigma.....L. CALIFORNICUS, sp. nov.

Flagellar joints 1 to 7 dentate; first flagellar joint stout, $2\frac{1}{2}$ times as long as thick.

Mesopleura scaly-punctate.....L. NIGER How.

Lygocerus floridanus Ashm.

Chirocerus floridanus Ashm., Trans. Am. Ent. Soc. Mo. Proc., 1881, p. 34.

Lygocerus floridanus Ashm., Ent. Am., III, p. 98.

♂ ♀. Length, 2 to 2.2^{mm}. Black, closely, finely punctate, subopaque; abdomen black, highly polished, pointed at tip, the petiole striate; legs, including coxæ, reddish-yellow. Antennæ in ♀ brown, acuminate at tips, the flagellar joints a little longer than thick; in ♂ flagellar joints 1 to 7 ramose, covered with sparse long hairs. Wings hyaline, the stigma large, semicircular, brown, the stigmal vein about one and one-third times as long as the stigma.

HABITAT.—Jacksonville, Fla.

Types, ♂ and ♀, in Coll. Ashmead.

All my specimens were reared from a large aphid on pine, *Lachnus australis* Ashm.

Lygocerus picipes, sp. nov.

♀. Length, 1.8^{mm}. Black, subopaque, finely shagreened; abdomen black, polished; legs brownish, piceous, the trochanters, knees, and tarsi yellowish, hind coxæ black. Antennæ 11-jointed, acuminate at tips, brown-black, the scape yellowish beneath; the pedicel is a little longer than the first flagellar joint; the second flagellar joint a little shorter than the first; the third and following slightly longer. Wings hyaline, the large stigma dark brown, the stigmal vein less than twice as long as the stigma.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from W. Hague Harrington.

The color of the anterior and middle coxæ and the scape beneath will at once separate the species from those that follow.

***Lygocerus triticum* Taylor.**

Ceraphron triticum Taylor, Am. Agric. 1860, p. 300, f. 1; Cress. Syn. Hym., p. 248.

This fly does not correspond with the above (*Ceraphron destructor* Say), therefore I have named it *triticum*, from the botanical name of wheat. It is not of such a shining black as Mr. Say's fly, but is rather rusty in appearance from a few hairs scattered over its body. In some specimens, when very fresh, the legs have a bright tinge of yellow. The antennæ (b, Fig. 2) are termed setigerous (having the basal joint large) and the last four globular, the intermediate one furnished with four long bristles resembling plumes. This is a very sure mark for distinguishing this family according to European classification. The eyes are large in proportion, the palpi 3-jointed. The fore wings have submarginal cells, with a faint nervure running to apex. The under wings have a long nervure running through and two smaller ones descending to the inferior region; these are so very slight, that you can only see their existence by a deep shade of the wings in a strong light, but are evidently nervures, indistinct as they are. The ovipositor is retractile and tubular. The fly deposits her eggs in the pupa of the Hessian fly. (Taylor.)

Unknown to me, and the above description is copied from the American Agriculturist. Miss Taylor further informs us that "this fly can be found in every wheat field throughout the country, from spring to autumn." Her description is very imperfect, and her figure of the male antenna strongly recalls the branched antenna of an *Eulophus*.

***Lygocerus stigmatus* Say.**

Ceraphron stigmatus Say, Boston Journ., I, p. 277; Lec. ed. Say's Works, II, p. 724.

Lygocerus stigmatus Ashm., Ent. Am., III, p. 98.

Ceraphron stigmatus Cr., Syn. Hym., p. 248.

♂ ♀. Length, 1.4^{mm}. Black, pubescent, closely, minutely punctulate, subopaque; abdomen ovate, pointed at tip, highly polished, the petiole striate; legs piceous black, the anterior tibiæ and tarsi and knees on middle and hind legs and their tarsi, pale or honey yellow. Antennæ in ♀ slightly thickened toward tips, the flagellar joints beyond the third, scarcely longer than wide; in the ♂ the first five flagellar joints dentate, pilose, the first joint being about twice as long as thick, excluding the short pedicel.

Wings hyaline, the stigma semicircular, brown, the stigmal vein about $1\frac{1}{4}$ the length of the stigma.

HABITAT.—Indiana; Canada.

Specimens in Coll. Ashmead and National Museum.

Recognized from specimens bred by Mr. James Fletcher, at Ottawa, Canada, from the raspberry aphid.

***Lygocerus niger* Howard.**

Megaspilus niger How., Ins. Life, vol. II, p. 247., ♀, f. 52.

Ceraphron triticum Smith, Rep. N. J. Exp. Sta., 1890, p. 502, f. 18.

♀. "Length, 1.6^{mm}; expanse, 3.33^{mm}; greatest width of fore wing, 0.62^{mm}. Scape of antennæ very long, somewhat swollen beyond middle; funicle long, curved, all joints increasing gradually in width from ped-

icel to club; joint 1 of funicle somewhat longer than pedicel, joint 3 shorter, joints 4 to 8 increasing in length very slightly. Head and mesonotum very faintly shagreened, but still glistening; lower portion of mesopleura and all of abdomen perfectly smooth. Abdomen subovoid in shape, acutely pointed at tip. Radial vein only slightly curved, extending a little more than half way from stigma to tip of wing. General color jet black; all trochanters, femora, and wing veins dark-brown; all tibiæ and tarsi lighter brown." (*Howard.*)

The ♂ is slightly smaller, with the flagellar joints 1 to 7 dentate, the first being $2\frac{1}{2}$ times as long as thick, excluding the pedicel, while the mesopleura are scaly-punctate.

HABITAT.—United States.

Types in National Museum.

Parasitic on the wheat aphid, *Siphonophora avenæ* Fabr.

Allied to *L. stigmatus* Say, but relatively larger, and at once distinguished by the difference in the length of the flagellar joints.

***Lygocerus 6-dentatus*, sp. nov.**

(Pl. VI, Fig. 8, ♂.)

♀. Length, 1.2^{mm}. Black, coriaceous, faintly sericeous; mesopleura, coxæ, and abdomen highly polished, shining, impunctured; legs brownish yellow, the coxæ polished black; wings hyaline, the stigma semicircular, brown, the stigmal vein $1\frac{1}{2}$ times as long as the stigma; antennæ brown-black, the pedicel and first flagellar joint equal, the last joint longer than the pedicel.

♂. Length, 1.1^{mm}. Agrees well with the ♀, except that all the femora and the posterior tibiæ are darker, the antennæ black, the flagellar joints 1 to 6 serrate, with long hairs, the first being scarcely twice as long as thick.

HABITAT.—District of Columbia.

Types, ♂ and ♀, in National Museum.

This species is labeled as having been bred July 22, 1886, from *Sarothrips rawayana*, on willow; but evidently the record is unreliable, and in all probability it came from some Aphidid or Cecidomyiid overlooked by the recorder.

***Lygocerus californicus*, sp. nov.**

♂. Length, 1.1^{mm}. Black, shining, alutaceous; abdomen piceous or obscure, rufous basally; legs brown, the anterior tibiæ and tarsi honey-yellow, the coxæ black. Antennæ black, flagellar joints 1 to 6 serrate, pubescent. Wings hyaline, the stigma semicircular, the stigmal nervure nearly straight, not, or scarcely, longer than the stigma.

HABITAT.—Los Angeles, Cal.

Type in National Museum.

Described from a single ♂ specimen reared by Mr. A. Koebele, from a Cecidomyiid gall on *Larrea mexicana*.

This species comes quite close to *L. 6-dentatus*, but is distinguished at once from that species and all the others by the brevity of the stigmal nervure and in having the abdomen piceous basally.

Lygocerus pacificus, sp. nov.

♀. Length 2.5^{mm}. Black, opaque, shagreened or closely punctate; antennæ long, black, the tip of pedicel reddish-yellow; first flagellar joint long, distinctly longer than the pedicel, the following joints a little shorter, about equal in length; mesopleura shagreened; wings subhyaline, the stigma large, oblong, brown, the stigmal vein much longer than the stigma; legs brownish-yellow, the coxæ black; abdomen emarginate at apex, the ventral valve and ovipositor slightly prominent.

HABITAT.—Placer County, Cal.

Type in National Museum.

Described from a single specimen. It is the largest species I have as yet seen in this genus; and its size, opaque surface, color of the legs, and the shape of the stigma will at once separate it from the others in our fauna.

MEGASPILUS, Westw.

Phil. Mag., I, p. 128 (1832); Först., Hym. Stud., II, p. 97 (1856); Thoms., öfv., 1858, p. 287.

Eumegaspilus Ashm. (pars) Can. Ent., xx, p. 48, 1888.

(Type *M. abdominalis*, Boh.)

Head transverse, the occiput margined; ocelli small, in a triangle; eyes ovate or long-oval, pubescent or hairy.

Antennæ inserted just above the clypeus, 11-jointed in both sexes, filiform or subfiliform, the scape long, the first flagellar joint usually much lengthened, the male with simple joints, never dentate nor ramose.

Maxillary palpi 5-jointed; labial palpi 3-jointed.

Mandibles bifid at tips.

Thorax ovoid, the prothorax slightly visible from above and produced into a slight collar anteriorly; mesonotum slightly narrowed anteriorly, with three impressed lines; scutellum longer than wide, subconvex, rounded behind, with a distinct frenalum; metathorax short, with acute angles.

Front wings pubescent, with a large subovate stigma, truncate at apex, the stigmal vein usually long and curved, the parastigma slightly developed. Wingless forms not uncommon.

Abdomen ovate, subpetiolate, the petiole short, stout, and strongly channeled, the second segment very large, striated at base.

Legs pilose, the posterior femora somewhat swollen, the last joint of the posterior tarsi longer than the second.

This extensive genus was very properly separated from *Ceraphron* Jurine, by Prof. Westwood, as early as 1832. In 1856 Dr. Arnold Förster again separated from it the genus *Lygocerus*, to contain those species having bare eyes and serrate antennæ in the males. The habits of the two genera are identical, and their structural differences have been sufficiently pointed out in my remarks under the genus *Lygocerus*.

In 1888, I erected the genus *Eumegaspilus* for some wingless forms which I now find are true *Megaspili*. The name, however, is retained for a closely allied apterous form, differing in several particulars from *Megaspilus*.

Our species are numerous, and may be distinguished by the following synoptical table:

TABLE OF SPECIES.

FEMALES.

1. Face very finely closely punctate or shagreened 2
 Face smooth, polished, impunctured.
 Apex of abdomen compressed, truncate, and gaping open, so that the valves of the ovipositor project.
 Legs brownish-yellow; antennæ brown-black.
 Pedicel shorter than the first flagellar joint .. *M. ANOMALIVENTRIS*, sp. nov.
 Pedicel as long as the first flagellar joint; scape and pedicel pale.
M. POPENOEI, sp. nov.
 Apex of abdomen normal.
 Legs brownish-yellow; antennæ brown-black.
 Pedicel as long as the first flagellar joint *M. AMBIGUUS*, sp. nov.
 Pedicel much shorter than the first flagellar joint.
 Posterior tibiæ with a brown streak above *M. STRIATIPES*, sp. nov.
2. Wings wanting or not fully developed 3
 Wings fully developed.
 Species shining.
 Face finely shagreened or rugose.
 Scape and legs pale brownish-yellow.
 Pedicel concolorous with flagellum *M. SCHWARZI*, sp. nov.
 Pedicel brownish-yellow.
 Face rather coarsely rugose.
 Posterior coxæ not black *M. MARYLANDICUS*, sp. nov.
 Posterior coxæ and femora dusky *M. HARRINGTONI* Ashm.
 Stigma piceous-black, wings subfuscous.
 Stigma brown, wings clear hyaline *M. HYALINIPENNIS*, Ashm.
 Species opaque, the thorax sometimes subopaque.
 Face closely finely punctulate.
 Hind coxæ black.
 Scape, pedicel, and legs rufous, the posterior femora and tibiæ fuscous;
pleura scaly-punctate *M. PENMARICUS*, sp. nov.
 Scape, pedicel, and legs brownish-yellow *M. VIRGINICUS*, sp. nov.
3. Wings abbreviated and narrow, reaching not quite to the middle of the abdomen.
 Scape, pedicel, first three flagellar joints, and legs, pale yellow.
M. OTTAWENSIS Ashm.
 Wings reaching only to the tip of the petiole.
 Antennæ brown-black, scape beneath and legs brownish-yellow.
M. CANADENSIS Ashm.

MALES.

Species smooth, shining.

First flagellar joint much longer than the second, the second and the following at least thrice as long as thick.

Scape and legs brownish-yellow.

Wings clear hyaline; length 1.6^{mm} *M. LEVICOEPS*, sp. nov.

Wings fusco-hyaline; length 2^{mm} *M. AMBIGUUS*, sp. nov.

Antennæ wholly brown-black, legs rufous *M. CALIFORNICUS*, sp. nov.

First flagellar joint not much longer than the second, the second and the following scarcely twice as long as thick.

Antennæ brown; legs rufous, abdomen piceous or rufous toward base.

M. PERGANDEI.

Megaspilus anomaliventris, sp. nov.

♀. Length, 2.4^{mm}. Black, shining; head and thorax finely alutaceous; antennæ brown-black; legs reddish-yellow, the posterior coxæ a little dusky basally; abdomen polished black, becoming piceous at apex. Eyes very large, occupying the greater portion of the sides of the head, pubescent. Antennæ 11-jointed, the flagellum flagellate, the scape long, projecting beyond the ocelli; pedicel small, about half the length of the first flagellar joint, the latter the longest joint, the second shorter than the first, the third and following joints to the last stouter and nearly of an equal length, very slightly longer than the second, the last more slender and a little longer than the penultimate. Wings hyaline, pubescent, with a faint dusky blotch below the stigmal vein, the stigma large oval, truncate behind, brown, the stigmal vein less than one and a half times as long as the stigma.

HABITAT.—Marquette, Mich.

Type ♀ in Coll. Ashmead.

Described from a single specimen collected by E. A. Schwarz.

Megaspilus Popenoei sp. nov.

♀. Length, 1.8^{mm}. Black, shining, impunctured, with a sparse greyish pubescence; scape, pedicel, collar, and legs, including the coxæ, brownish-yellow; flagellum black, abdomen beneath and towards base piceous. Antennæ 11-jointed, subclavate, the flagellum slightly more than twice as long as the scape; the first flagellar joint is equal to the pedicel, the second, third, and fourth shorter than the first but stouter, the following longer than thick, the last conic, nearly twice as long as the penultimate. Wings subfuscous, hyaline at base, the parastigma slightly developed, the stigma ovate, the stigmal vein about one and a half times as long as the stigma; all the nervures dark-brown. Abdomen longer than the head and thorax together, compressed and gaping open at apex.

HABITAT.—Manhattan, Kansas.

Type ♀ in Kansas State Agricultural College.

Described from a single specimen received from Prof. E. A. Popenoe and in honor of whom the species is named.

Megaspilus ambiguus sp. nov.

♂ ♀. Length, 1.2 to 1.6^{mm}. Black, shining, finely alutaceous; scape and legs brownish-yellow. The posterior coxæ black basally. In the ♂ the prosternum and the collar laterally are yellow. Mandibles and palpi pale. Antennæ 11-jointed, in ♀ the flagellum flagellate, the pedicel and first flagellar joint of an equal length, the following to the last only slightly longer than thick, the last joint two and a half times as long as thick; in the ♂ filiform, the flagellum black, pubescent, the pedicel and the first flagellar joint together distinctly shorter than the scape; the first joint of the flagellum is not more than 4 times as long as thick, the second shorter, the following to the last nearly equal, a little less than thrice as long as thick, the last joint about one-fourth longer than the penultimate. Wings hyaline, very faintly tinged with fuscous, the stigma brown, the stigmal vein two and a half times the length of the stigma.

HABITAT.—Arlington, Va., and Washington, D. C.

Types ♂ ♀ in Coll. Ashmead.

Described from several specimens taken by Schwarz, Pergande and myself.

The species is closely allied to *M. leviceps*, but it is slightly larger, with a fine alutaceous sculpture, and with a difference in the relative length of the antennal joints.

Megaspilus striatipes sp. nov.

(Pl. VI, Fig. 7, ♀.)

♀. Length, 1.4^{mm}. Black, shining; vertex of head and thorax very faintly shagreened, the face smooth and highly polished. Scape and legs brownish-yellow, the posterior femora and tibiæ with a fuscous streak above. Antennæ 11-jointed, the flagellum flagellate, stout, black, a little more than twice the length of the scape; the scape is long, extending beyond the ocelli; the pedicel is much shorter than the first flagellar joint; the latter is much longer and slenderer than the second; remaining joints widening, but still all a little longer than thick, the last very slightly longer than the penultimate. Wings fuscous, the stigma large, brown, the stigmal vein less than twice the length of the stigma.

HABITAT.—Ottawa, Canada.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

Megaspilus Schwarzii sp. nov.

♀. Length, 1.8^{mm}. Black, shining, very finely shagreened, the scutellum smooth; scape and legs brownish-yellow; the propectus piceous. Antennæ 11-jointed, the flagellum brown-black, about two and a half times as long as the scape, the pedicel as long as the first flagellar joint, the latter the narrower, the following joints to the last, a little shorter,

but gradually thickened, the last joint twice as long as the penultimate. Wings hyaline, the stigma brown, the stigmal vein one and a half times as long as the stigma. Abdomen very slightly longer than the thorax, smooth and polished, pubescent toward tip, the venter flatter than usually, the petiole and second segment at base, striate.

HABITAT.—Washington, D. C.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from Mr. E. A. Schwarz.

***Megaspilus marylandicus* sp. nov.**

♀. Length, 2.4^{mm}. Black, subopaque, finely shagreened and sparsely pubescent; the scape, pedicel, and legs reddish-yellow. Antennæ 11-jointed, the flagellum brown, slightly paler basally, not longer than twice the length of the scape; the pedicel yellow, distinctly shorter and thicker than the first flagellar joint, the second shorter than the first, third and fourth about equal, shorter than the fifth, the fifth to the last about equal, very slightly longer than thick, the last twice as long as thick. Wings fuscous, the stigma brown, the stigmal vein slightly more than twice the length of the stigma. Abdomen a little longer than the head and thorax together, black, polished, boat-shaped below, somewhat flat above.

HABITAT.—Oakland, Md.

Type ♀ in Coll. Ashmead.

Described from specimens received from Mr. E. A. Schwarz.

***Megaspilus Harringtoni* Ashm.**

Can. Ent. vol. xx, p. 48.

♂ ♀. Length, 2 to 2.5^{mm}. Black; head and thorax with a fine reticulate punctuation; abdomen polished black. Antennæ 11-jointed, the scape and pedicel dull yellow, the flagellum brown black; the pedicel is not quite as long as the first flagellar joint. Legs dull yellow, the posterior coxæ black, the anterior and middle coxæ dusky basally, the posterior femora fuscous or dusky. Wings subhyaline, pubescent, the large stigma and stigmal vein brown.

Abdomen the length of the thorax, the petiole yellowish.

The ♂ differs from ♀ only in its slightly smaller size and in the long filiform antennæ, the joints of the flagellum being about four times as long as thick, the scape yellowish toward the base.

HABITAT.—Ottawa, Canada.

Types ♂ ♀ in Coll. Ashmead.

The types were taken by Mr. W. H. Harrington.

***Megaspilus hyalinipennis* Ashm.**

Ent. Am., III, p. 98; Cress. Syn. Hym., p. 313.

♀. Length, 2^{mm}. Robust, black, alutaceous, with a very sparse, pale pubescence. Antennæ 11-jointed, filiform, dark brown; the pedicel

is a little shorter than the first flagellar joint, the second joint a little shorter than the first, the remaining, except the last, which is longer, subequal with second. Legs pale brown, the femora and tibiæ fuscous. Wings clear hyaline, the stigma large, brown, the stigmal vein about twice the length of the stigma. Abdomen polished black, pointed and sparsely pubescent at tip, the petiole and second segment, at base, striolate.

HABITAT.—Jacksonville, Fla.

Type ♀ in Coll. Ashmead.

***Megaspilus virginicus*, sp. nov.**

♀. Length, 2.2^{mm}. Robust, black, opaque, shagreened, with a sparse whitish pubescence; the head more coarsely shagreened than the thorax; the scutellum finely shagreened and shining; scape and legs brownish yellow. Antennæ 11-jointed, the flagellum brown-black, twice the length of the scape, the latter not extending beyond the ocelli; pedicel not quite as long as the first flagellar joint; the second and third flagellar joints equal, about half the length of the first, but stouter, the joints beyond a little longer and stouter, the last not much longer than the penultimate. Wings fusco-hyaline, the stigma brown-black, the stigmal vein about one and a half times as long as the stigma. Abdomen as long as the head and thorax together, black, shining, with a rather dense, fine pubescence toward apex.

HABITAT.—Arlington, Va.

Type ♀ in Coll. Ashmead.

Described from a single specimen.

***Megaspilus canadensis* Ashm.**

Eumegaspilus canadensis Ashm., Can. Ent., xx, p. 49.

♀. Length, 2.2^{mm}. Black, shining; the head and thorax alutaceous, with two small foveæ on each side of the front ocellus; occiput distinctly margined; eyes pubescent. Antennæ 11-jointed, subclavate, brown-black, the scape pale beneath, the first flagellar joint longer than the pedicel, the following very slightly subequal to the last, the last one-third longer than the penultimate. Wings extending only to tip of the petiole. Legs, including coxæ, brownish-yellow. Abdomen highly polished, the petiole striate.

HABITAT.—Canada.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from W. Hague Harrington.

***Megaspilus ottawensis* Ashm.**

Eumegaspilus ottawensis Ashm., Can. Ent. xx, p. 49.

♀. Length, 2^{mm}. Black, shining, impunctured; eyes large, pubescent. Antennæ 11-jointed, subclavate, the scape, pedicel, first three

flagellar joints, and the legs honey-yellow. Wings linear, extending not quite to the middle of the abdomen. Abdomen black, polished, with striæ at base.

HABITAT.—Ottawa, Canada.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from W. Hague Harrington.

***Megaspilus læviceps*, sp. nov.**

♂. Length, 1^{mm}. Black, highly polished; scape and legs pale brownish yellow; flagellum brown-black; mandibles black; the short petiole and a streak at base of abdomen yellowish. Head transverse, sparsely hairy, the occiput with a distinct margin, the face convex, smooth, shining. Palpi pale. Antennæ 11-jointed, longer than the body; the pedicel and the first flagellar joint together are as long as the scape, the pedicel very small, rounded; the flagellum is cylindrical, covered with a short, rather dense pubescence, the first joint about 5 times as long as thick, the second one-third shorter, the following very slightly shorter. Wings hyaline, the stigma semicircular, brown; the stigmal vein nearly twice as long as the stigma.

HABITAT.—Arlington, Va.; Washington, D. C., and Bladensburg, Md.

Types, all ♂ s, in Coll. Ashmead.

A specimen was taken by E. A. Schwarz at Bladensburg, Md.; the others were captured by myself on the outskirts of Washington and along the banks of the Potomac River, in Virginia.

***Megaspilus californicus*, sp. nov.**

♂. Length, 2.2^{mm}. Black, smooth, shining; the head transverse, obliquely narrowed behind the eyes. Antennæ 11-jointed, filiform, longer than the body, brown-black, the scape long, reaching much beyond the ocelli, the pedicel very small, rounded, the first flagellar joint more than six times as long as thick, the following joints shorter, subequal. Legs pale rufous. Wings subhyaline, the stigma large, brown, the stigmal vein two and a half times as long as the stigma.

HABITAT.—California.

Type ♂ in Coll. Ashmead.

***Megaspilus Pergandei*, sp. nov.**

♂. Length, 1.2^{mm}. Black, smooth, shining; the vertex of head and thorax faintly alutaceus. Antennæ 11-jointed, slightly longer than the body, brown, the scape not reaching beyond the ocelli, the pedicel small, oval, the first flagellar joint scarcely thrice as long as thick, the following shorter, about twice as long as thick, except the last, which

is almost as long as the first. Legs rufous or reddish yellow. Wings subhyaline, pubescent. Abdomen a little longer than the thorax, polished black, a little rufous or piceous toward base.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen.

DICHOGMUS Thomson.

Öfv. 1859, p. 301.

(Type *D. dimidiatus* Thoms.)

Head large, wider than the thorax, the front convex, the occiput narrowly margined; ocelli 3 triangularly arranged, the eyes rather large.

Antennæ inserted just above the clypeus, 11-jointed in both sexes, in ♂ longer than the body, filiform, densely pubescent.

Maxillary palpi 5-jointed; labial palpi 3-jointed..

Mandibles bidentate.

Thorax subovoid, with a slight collar, the mesonotum with 2 im-pressed lines, the metathorax very short.

Wings entirely wanting.

Abdomen ovate, the apex slightly pointed; the second segment very large, very faintly stiolate at base.

Legs pubescent.

A European genus not yet recognized in America. It resembles *Lagynodes* Förster and *Eumegaspilus* Ashm., but is easily separated from both by the two distinct mesonotal furrows. I have seen speci-mens of the genus in Europe.

EUMEGASPILUS Ashm.

Can. Ent., Vol. xx, p. 49, 1888.

(Type, *E. erythrothorax*.)

Head broadly transverse, across the eyes twice as wide as the thorax, the occiput distinctly margined; ocelli 3, small, triangularly arranged; eyes large, oval, faintly pubescent.

Antennæ inserted just above the clypeus, 11-jointed in both sexes; in ♀ subclavate, the first flagellar joint longer than the pedicel; in ♂ filiform, the first flagellar joint two-thirds the length of the scape, the following joints lengthened, cylindrical.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles bifid.

Thorax narrowed, the prothorax visible from above only as a slight neck; mesonotum trilobed; scutellum semicircular, margined behind, the axillæ scarcely traceable; metathorax short, truncate behind, the upper edge of truncature margined,

Wings entirely wanting.

Abdomen as in *Megaspilus*, the petiole short, striate, the second segment occupying a little more than half the whole surface, the following segments short.

Legs pubescent, the posterior tarsi with the first joint as long as all the remaining joints united, the last joint not longer than the second.

Allied to the wingless forms in *Megaspilus*, but with a much larger head, narrower thorax, and with 4-jointed, not 5-jointed, maxillary palpi. It has also a superficial resemblance to the genus *Lagynodes* Förster, but the thorax in that genus is not trilobed and the male has an acute spine between the base of the antennæ.

Two species, *E. canadensis* and *ottawensis*, described in Canadian Entomologist, Vol. xx, p. 49, under this genus I find are nothing but wingless species belonging to the genus *Megaspilus*. The genus as now restricted will contain but a single species, as follows:

***Eumegaspilus erythrothorax* sp. nov.**

(Pl. VI, Fig. 6 ♀.)

♀. Length, 1.9^{mm}. Head and abdomen black; face, scape, thorax, and petiole pale rufous or brownish-yellow; legs pallid yellow. Head and thorax closely, minutely punctulate; petiole striate; pedicel and flagellum black, the first flagellar joint longer than the pedicel. Abdomen smooth, shining, much longer than the head and thorax united.

♂. Length, 1.5^{mm}. Agrees with the ♀, except that the head, the pedicel, and the base of the abdomen as well as the thorax are brownish yellow, while the flagellar joints are long and cylindrical, the first being 4 times as long as the pedicel.

HABITAT.—Jacksonville, Fla.

Types ♂ and ♀ in Coll. Ashmead.

A pretty and easily recognized species, apt to be mistaken for a *Lagynodes*, but readily distinguished from the characters pointed out in the generic description.

LAGYNODES Förster.

Beitr. 1841, p. 46.

Micrope Hal., Ent. Mag. 1 (1833).

(Type *L. pallidus* Boh.).

Head deflexed, when viewed from in front, longer than wide, convex, in ♀ with an impression above the antennæ, in the ♂ with a spine between the antennæ; occiput delicately margined; ocelli wanting; eyes very small, rounded.

Antennæ inserted close to the clypeus, 11-jointed in both sexes, the scape long, longer than the head, the pedicel more than twice as long as thick, the flagellum subclavate, the terminal joint not longer than thick, submoniliform.

Maxillary palpi short, 4-jointed; labial palpi 2-jointed.

Mandibles bifid.

Thorax oblong, compressed at sides, subconvex above, the collar not apparent, the mesonotum with a delicate impressed median line, scutellum small, metathorax very short.

Wings wanting.

Abdomen pointed ovate, subpetiolate, twice the length of the thorax and much wider, beneath strongly convex, above subconvex, the second segment very large, occupying about two-thirds of the whole surface.

Legs pilose, the last joint of posterior tarsi twice as long as the second, claws small, simple.

The small eyes, absence of ocelli, and the form of the thorax, sufficiently separate this genus from all the others in the tribe *Megaspilini*. The male is readily distinguished by having an acute spine between the antennæ.

Only a single species has been recognized in our fauna, as follows:

***Lagynodes minutus*, sp. nov.**

(Pl. VI, Fig. 10, ♀.)

♀. Length, 1 to 1.5^{mm}. Honey-yellow to reddish-yellow, polished, impunctured, sparsely pilose; the antennæ basally and the legs pale or whitish. Antennæ 11-jointed, thickened toward tips, the apical joints brown; the flagellar joints, except the last, which is oblong, are not longer than thick. The mesonotal line is only indicated posteriorly, or entirely wanting. Abdomen with a few raised lines at base, the second segment at apex tinged with fuscous or brown.

HABITAT.—Washington, D. C., and Arlington, Va.

Types in Coll. Ashmead and National Museum.

Described from many specimens taken by myself and Schwarz.

The species is much smaller, more slender, and paler colored than the European *L. rufus* Förster (= *L. pallidus* Boh.).

***ATRITOMUS* Förster.**

Kl. Mon., p. 56 (1878).

(Type *A. coccophagus* Först.)

Head transverse, stout, wider than the thorax, when viewed from in front, wider than long; eyes large, rounded, prominent, bare; ocelli 3, triangularly arranged.

Antennæ inserted at the clypeus, 11-jointed, in ♂ serrate, in ♀ filiform, the first three flagellar joints small.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles bidentate.

Thorax subovoid, the prothorax not visible from above; mesonotum with a single central impressed line or without impressed lines; the scutellum large, longer than wide, the axillæ usually, but not always, separated; metathorax very short, the angles rounded.

Front wings as in *Lygocerus*, with a large semicircular stigma.

Abdomen ovate, subpetiolate, the second and third segments the longest, subequal, the following short.

Legs as in *Ceraphron*.

This genus, as here recognized, differs from *Ceraphron* in having a stigmated marginal nervure and serrate antennæ in the male; and from *Lygocerus* and *Megaspilus* in having, at the most, only a single mesonotal furrow.

Förster characterized the genus as being without trace of a mesonotal furrow; but, as I have found to be the case in *Aphanogmus*, species probably occur with and without a furrow.

A single species is known in America.

***Atritomus americanus*, sp. nov.**

(Pl. VI, Fig. 9, ♂.)

♂. Length, 1.3^{mm}. Black, shining, feebly microscopically punctate; antennæ brown; legs reddish-brown, the coxæ black; abdomen piceous; mandibles black or piceous. Head transverse, a little wider than the thorax. Eyes large, oval, bare. Antennæ as long as the body, the pedicel small, triangular, the first, second, third, and fourth funicular joints subserrate, the first the longest, a little more than thrice as long as thick, the following a little shorter. Thorax scarcely narrowed before, with a delicate, central grooved line. Metathorax rounded behind. Wing hyaline, pubescent, the stigma large semicircular, reddish brown, the stigmal vein a little longer than the stigma. Abdomen ovate, as long as the thorax, the petiole very short, rugose, the second segment occupying about half of the remaining surface, the third and fourth equal, longer than the following, the following very short; claspers flat, distinctly extended.

HABITAT.—Odenton, Md.

Type ♂ in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

Tribe II.—CERAPHRONINI.

The species in this tribe can always be distinguished from those in the *Megaspilini* by the linear marginal nervure and the paucity of joints in the female antennæ, the mesonotum, at the most, having but a single impressed line.

The genera may be recognized by the aid of the following table:

TABLE OF GENERA.

FEMALES.

Antennæ 9-jointed	3
Antennæ 10-jointed.	
Wingless forms	2

Winged.

- Mesonotum with a median impressed line.
 Scutellum flat or subconvex, with a marginal frenum.... CERAPHRON Jurine.
 Scutellum convex, acuminate, without a frenum APHANOGMUS Thoms.
 Mesonotum without a furrow (= Synarsis Först.)..... APHANOGMUS Thoms.
2. Mesonotum with a median impressed line..... CERAPHRON.
 Scutellum flat or subconvex with a frenum..... CERAPHRON.
 Scutellum convex, without a frenum..... APHANOGMUS.
 Mesonotum without a median furrow..... APHANOGMUS.
3. Mesonotum with a median impressed line..... NEOCERAPHRON, gen. nov.

MALES.

- Antennæ 10-jointed..... 3
 Antennæ 11-jointed.
 Mesonotum without a median impressed line..... 2
 Mesonotum with a median impressed line.
 Scutellum depressed with a marginal frenum.
 Antennæ simple..... CERAPHRON.
 Scutellum convex, acuminate, without a frenum.
 Antennæ serrate..... APHANOGMUS Thoms.
2. Scutellum convex, acuminate, without a frenum.
 Antennæ serrate APHANOGMUS Thoms.
3. Mesonotum with a median impressed line.
 Antennæ filiform..... NEOCERAPHRON, gen. nov.

CERAPHRON Jurine.

Hym., p. 303 (1807).

Calliceras Nees, Mon., II, p. 280, 18; Thoms. Öfv., 1858, p. 302.

Hadroceras Först., Beitr., p. 46 (1841).

Ceraphron Först., Hym. Stud., II, p. 97, 1856.

Megaspilidea Ashm., Can. Ent., XX, p. 49 (apterous forms).

(Type *C. sulcatus* Jurine.)

Head transverse, when viewed from in front oblong or oval, convex, impressed above the antennæ; ocelli 3, triangularly arranged; eyes oval.

Antennæ inserted just above the clypeus, in ♀ 10-jointed, subelavate, the scape long, obclavate; in ♂, 11-jointed, filiform, pubescent, or pilose.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles bidentate.

Thorax subovoid, the prothorax not visible from above, mesonotum with a median impressed line, rarely entirely wanting, the scutellum elongate, flattened or subconvex, with a distinct frenum; metathorax short, the angles acute or prominent, and with 1 or 2 teeth at base.

Front wings pubescent, with a short linear marginal vein and a rather long curved stigmal vein; apterous individuals of frequent occurrence.

Abdomen subsessile, ovate, compressed beneath, subconvex above and longer than the thorax, the second segment large, striolate at base.

Legs pubescent, the posterior tarsi with the first joint elongate, joints 2-4 subequal.

The majority of the species in this genus are minute and closely resemble those in *Aphenogmus* Thoms., although they are readily separated by the shape of the scutellum, which is broader, more flattened, or subconvex, without a frenum, the antennæ in the males being filiform, not dentate or serrate, as in that genus. Apterous forms are quite common and will probably prove to be dimorphic forms of the winged species.

The records of rearings, with but few exceptions, show the group is almost exclusively parasitic on the dipterous family Cecidomyidæ and the homopterous family Aphididæ.

The species known to me in our fauna may be thus tabulated:

TABLE OF SPECIES.

FEMALES.

- Winged forms 2
 Wingless forms.
 Brownish yellow, the vertex of head fuscous *C. FUSCICEPS*, sp. nov.
 Black, the base of abdomen pale or yellowish.
 Antennæ, except scape at base, black *C. MINUTUS* Ashm.
 Wholly black, with wing pads.
 Legs golden yellow *C. AURIPES*, sp. nov.
 2. Wholly black 3
 Thorax and abdomen brownish yellow, the head black.
 *C. MELANOCEPHALUS* Ashm.
 Head and thorax black.
 Abdomen obscure rufous or piceous, yellowish at base and beneath.
 Shining, but distinctly punctulate; scape rufous, the flagellum black.
 *C. PALLIDIVENTRIS*, sp. nov.
 Polished, impunctured, angles of metathorax prominent; antennæ brownish-yellow, 4 or 5 terminal joints black *C. BASALIS*, sp. nov.
 Head and thorax brownish yellow; abdomen black; base and apex of front wings hyaline *C. CALIFORNICUS*, sp. nov.
 3. Head and thorax distinctly, closely punctate.
 Pleura aciculated; antennæ brown; legs brownish yellow.
 *C. PUNCTATUS*, sp. nov.
 Head and thorax smooth, or the punctuation exceedingly delicate.
 Antennæ, tegulæ, and legs black; pleura not aciculated; flagellum slender, the joints all longer than thick *C. UNICOLOR* sp. nov.
 Antennæ, tegulæ, and legs brownish piceous; trochanters, tips of tibiæ, and the tarsi yellowish white *C. SALICICOLA*, sp. nov.
 Scape, tegulæ, trochanters, knees, tibiæ, and tarsi yellow; flagellum subclavate *C. AMPLUS*, sp. nov.
 Scape and legs brownish yellow.
 Tegulæ black; flagellum black.
 Wings fuscous *C. MELANOCERUS*, sp. nov.
 Wings subhyaline *C. PEDALIS*, sp. nov.
 Tegulæ pale; antennæ brown, the scape and pedicel yellow; pedicel longer than the first flagellar joint, smooth, highly polished.
 Wings hyaline; flagellar joints 1 to 5 transverse, 6 and 7 quadrate.
 *C. FLAVISCAPUS*, sp. nov.

- Wings subhyaline; flagellar joints 1 to 5 transverse, 6 and 7 longer than wide C. GLABER, sp. nov.
 Tegulæ piceous; antennæ fuscous; first flagellar joint twice as long as the second; wings subhyaline C. CARINATUS, sp. nov.
 Scape, tegulæ, and legs, including the coxæ, honey-yellow.
 First flagellar joint only a little longer than the second; wings clear hyaline C. MELLIPES, sp. nov.

MALES.

- Wholly black 2
 Not wholly black.
 Thorax piceous, collar, base of abdomen, and legs bright yellow.
 Thorax black, base of abdomen pale C. LONGICORNIS, sp. nov.
 2. Distinctly punctate. C. BASALIS, sp. nov.
 Scape and legs yellow C. PUNCTATUS, sp. nov.
 Faintly punctate or nearly smooth.
 Antennæ black C. CARINATUS, sp. nov.
 Smooth, polished, impunctate:
 Head and abdomen black, the thorax piceous.
 Antennæ dark brown, the scape beneath and legs, pale yellow.
 C. GLABER, sp. nov.

Ceraphron fusciceps sp. nov.

♀. Length, 1^{mm}. Brownish-yellow or honey-yellow, the head more or less fuscous on vertex; eyes and flagellum black or brown-black; mesopleura sometimes tinged with fuscous. Head and thorax microscopically punctulate; scutellum finely striate at base; flagellum subclavate, the pedicel more than twice as long as the first flagellar joint, flagellar joints 2 to 6 transverse, the 7th quadrate, the last fusiform, thrice as long as the 7th.

HABITAT.—District of Columbia and Oakland, Md.

Types in Coll. Ashmead.

Described from 3 specimens.

Ceraphron minutus Ashm.

Megaspilidea minuta Ashm., Can. Ent., xx, p. 49.

♀. Length, 1.2^{mm}. Black; abdomen fuscous, yellowish at base and beneath; scape and legs yellow. The head and thorax are closely, minutely punctulate; abdomen at extreme base striate; pedicel and flagellum black, subclavate; pedicel twice the length of first flagellar joint; flagellar joints 2 to 5 transverse, the 7th quadrate; 8th or last fusiform, three times as long as the 7th.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

One specimen; received from Mr. W. Hague Harrington.

Ceraphron auripes, sp. nov.

♀. Length, 1^{mm}. Black, shining; scape brownish-yellow; legs bright yellow. Head and thorax minutely, closely punctulate; wings

but slightly developed, extending to the base of the abdomen; abdomen highly polished black, more than twice the length of the thorax; flagellum subclavate, joints 2 to 4 transverse, the 5th larger, transverse, the 6th and 7th quadrate, the last fusiform, thrice as long as the 7th.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harington.

Ceraphron melanocephalus Ashm.

Copidosoma melanocephalum Ashm. Trans. Am. Ent. Soc., Vol. XIII, p. 131.

♀. Length, 1.2^{mm}. Head black; thorax abdomen and legs, brownish-yellow; flagellum black, paler or brownish at base. Head and thorax closely minutely punctate, the occiput with a delicate median carina from the ocelli; flagellum clavate, the 3 terminal joints being very large and thick and as long as all the others (excepting the scape) united, the funicle joints 2 to 5 transverse; first club joint quadrate, the second, a little longer than wide, the last not quite thrice as long as the second. Wings subhyaline.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from one specimen reared May, 1885, from the Cynipid gall *Belonocnema Treata* Mayr.

Ceraphron pallidiventris sp. nov.

♀. Length, 1.6^{mm}. Head and thorax black, shining, faintly shagreened; abdomen obscure rufous or piceous above, at base and beneath yellow; scape, pedicel beneath and at tip, and legs, pallid-yellow; tegulae yellowish; wings hyaline, the stigmal vein yellowish, long and curved, forming almost a closed marginal cell; marginal vein brownish.

Antennae 10-jointed, the flagellum subclavate, brown-black; scape long, half the length of the flagellum; pedicel a little longer than the first flagellar joint; second flagellar joint scarcely two-thirds the length of the first; the third, fourth and fifth, transverse, but increasing in length and width, the sixth, quadrate, the seventh, oblong-quadrate, the last fusiform, as long as the two preceding joints united. Angles of metathorax tubercular, the metapleura finely rugose, bounded by a carina above. Abdomen a little longer than the head and thorax together, pointed at tip and subcompressed at apex beneath.

HABITAT.—Fort Pendleton, Md.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

The species comes nearest to *C. basalis*, but it is slightly larger, the relative length of the flagellar joints different, the legs pallid yellow, the wings hyaline, while the sculpture is wholly different.

Ceraphron basalis, sp. nov.

♂ ♀. Length, 0.8 to 1.2^{mm}. Head and thorax polished black; abdomen rufous or rufo-piceous, yellowish at base; scape, and sometimes the pedicel, and two or three of the basal flagellar joints, and the legs yellow or brownish-yellow. Wings subhyaline, slightly tinged, the stigmal vein long, curved. In the ♀ the flagellum is twice the length of scape, subclavate, the joints 2 to 5 transverse, the 5th longer and wider than the 4th, 6th and 7th quadrate, the last fusiform, as long as the 6th and 7th united. In the ♂ the flagellum is filiform, 1½ times as long as the body, or about 5 times as long as the scape, pale brown, the first joint the longest.

HABITAT.—District of Columbia and Arlington, Va.

Types in Coll. Ashmead.

Described from 8 specimens (2 ♂ 6 ♀), collected by Mr. E. A. Schwarz and myself.

Its smaller size, very highly polished, impunctate surface, and the difference in the antennæ and color of wings at once distinguish it from *C. pallidiventris*.

Ceraphron californicus, sp. nov.

♀. Length, 0.8^{mm}. Head and thorax brownish-yellow; abdomen black; eyes brown. Antennæ 10-jointed, two-thirds the length of the body, the flagellum brownish beyond the first joint; scape a little longer than half the length of the flagellum; pedicel and first flagellar joint equal, nearly twice as long as the second; last joint as long as the pedicel. Thorax shining, but feebly, minutely punctulate. Wings hyaline at base and apex, fuscous from the basal third to near the apex.

HABITAT.—Folsom, Cal.

Type in National Museum.

One specimen; taken by Mr. A. Koebele, July 12, 1885.

Ceraphron punctatus, sp. nov.

(Pl. VII, Fig. 2, ♀.)

♂ ♀. Length, 1.1 to 1.6^{mm}. Black, finely, closely punctate, subopaque; antennæ 10-jointed, brownish-yellow, the apical half fuscous or black; scape obclavate, nearly two-thirds the length of the flagellum; pedicel longer than the first flagellar joint; flagellum slightly incrassated toward tip; first joint twice as long as thick; joints 2 to 5 transverse, sixth and seventh very little longer than wide, the last joint fusiform, as long as the two preceding united. Vertex with a slight grooved line between the lateral ocelli. Eyes pubescent. Mandibles

pale rufous. Mesonotum with a central impressed line. Pleura shining, but more or less aciculated. Metathorax rugose, very short, the posterior angles toothed. Tegulae dull rufous or piceous. Wings subfuscous, the venation piceous, the stigmal nervure long, slightly curved, about three times as long as the linear marginal vein, and forming almost a closed marginal cell. Legs, including coxæ, brownish-yellow. Abdomen stout, longer than the head and thorax united, polished black, with a slight striated elevation at base of the second segment above.

The ♂ agrees with the ♀, except that the abdomen is shorter and slightly piceous at base, the antennæ filiform, 11-jointed, the scape and legs brownish-yellow, while the flagellum is brown. The antennæ are as long as the body, the scape as long as the first three flagellar joints united; pedicel very small; first flagellar joint slightly more than twice as long as thick, a little stouter than the others, and subequal with the last joint, the latter the longer joint; the three following joints are subequal, the four following gradually become a little longer, the last very slightly longer than the first.

HABITAT.—Virginia, Maryland, and District of Columbia.

Types in Coll. Ashmead and National Museum.

Described from many specimens.

Ceraphron unicolor, sp. nov.

♀. Length, 2 to 2.1^{mm}. Wholly black, shining, the articulations of the legs and the tarsi alone pale brown; head and thorax faintly sculptured; face deeply impressed above the insertion of antennæ, with a grooved line extending forward from the front ocellus; eyes large, pubescent. Antennæ 10-jointed, slender, the scape long, obclavate, a little longer than half the length of the flagellum; first flagellar joint longer than the pedicel, about four times as long as thick, the second two-thirds the length of the first, the two following subequal, those beyond longer, at least 2½ times as long as thick, the last joint being the longest, and longer than the first. Thorax with a central grooved line, which is subobsolete anteriorly. Post-scutellum toothed. Metathorax very short, with the posterior angles acute. Wings subfuscous; the stigmal vein long. Abdomen stout, highly polished, black, as long as the head and thorax together, with a striate space at base.

HABITAT.—Cheyenne, Wyo., and Alta, Utah.

Types in Coll. Ashmead.

A single specimen of this species was taken by Schwarz in Utah, and another by Wickham in Wyoming.

Ceraphron salicicola, sp. nov.

♀. Length, 0.9^{mm}. Black, shining, feebly punctate; face emarginate; antennæ dark brown; pedicel yellow at apex, as long as the first and second flagellar joints together; flagellum subclavate, the joints

gradually widening after the second, the last ovate, about as long as the two preceding joints united. Legs brown; the trochanters, spot on knees, tip of tibiæ, and the tarsi yellowish-white. Wings hyaline, iridescent, pubescent. Abdomen piceous-black, shining.

HABITAT.—Los Angeles, Cal.

Type in National Museum.

A single specimen, labeled as having been "bred from old willow wood partly covered with fungus and infested with Coleopterous larvæ."

In all probability, with the coleopterous larvæ were associated Dip-
terous larvæ from which the *Ceraphron* came.

Ceraphron amplus, sp. nov.

♀. Length, 2.2^{mm}. Polished black, but showing some faint microscopic punctures; face deeply emarginated; vertex with a grooved line between the lateral ocelli; eyes pubescent; mandibles brownish; legs brownish-yellow; the coxæ black; the femora and tibiæ dark-brown or fuscous at the middle. Antennæ 10-jointed, black, with a yellow ring between the pedicel and the first funicle joint. Scape long, obclavate, as long as the pedicel and the first three funicle joints united; flagellum subclavate, the first joint being as long as the pedicel, the second, about two-thirds the length of the first, the following to the penultimate subequal, the penultimate longer than preceding joint, or about two-thirds the length of the last, which is long, very slightly longer than the first. Thorax with a central grooved line. Metathorax with the angles but slightly prominent, the post-scutellum toothed. Wings subfuscous, the stigmal vein long and curved. Abdomen long and stout, longer than the head and thorax together, pointed at tip, the second segment occupying fully half the whole length of the abdomen, with striæ at base.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Ceraphron melanocerus, sp. nov.

♀. Length, 1.6^{mm}. Polished black; legs brownish-yellow, the coxæ and femora obfuscated or fuscous; face with an antennal impression and a deep grooved line in front of the front ocellus; eyes pubescent. Antennæ 10-jointed, black, with a pale ring at apex of pedicel; scape long, obclavate; flagellum subclavate, the first funicle joint long, but scarcely as long as the pedicel, the second, only half the length of the first, the joints from the third to the last gradually increasing in size, the third and fourth quadrate, the fifth and sixth a little longer than thick, the last fusiform, twice as long as the penultimate. Thorax with a central grooved line; pronotum deeply impressed at the sides; tegulæ black; metathorax rugose, the posterior angles not acute. Wings subfuscous, the stigmal vein long, curved. Abdomen polished black, as

long as the head and thorax together, the second segment with striæ at base, a little longer than all the following segments united.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Two specimens received from Mr. W. H. Harrington.

Ceraphron pedalis, sp. nov.

♀. Length, 1.5^{mm}. Polished black, with some sparse, minute punctures; legs entirely brownish-yellow; antennæ black; wings subhyaline, or with a yellowish tinge. Differs principally from *C. melanocerus* in having the axillæ united before the base of the scutellum, the metapleura bounded above by a high carina, the post-scutellum distinctly toothed, the posterior angles of metathorax produced into a tooth, the paler, more uniformly colored legs, while the abdomen is longer, the second segment being fully twice as long as all the following joints united.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Ceraphron flaviscapus, sp. nov.

♀. Length, 0.9 to 1^{mm}. Polished black, impunctured; scape, pedicel, and legs, yellow or brownish-yellow; flagellum subclavate, brown or fuscous; face impressed with a grooved line extending from the front ocellus; eyes pubescent; thorax with a central grooved line; scutellum a little longer than wide; post-scutellum with a small tooth; posterior angles of metathorax acute; wings hyaline; tegulæ yellowish.

The antennæ are 10-jointed, the flagellum subclavate; first flagellar joint much shorter than the pedicel, obconic; the joints 1 to 5 transverse, 6 and 7 quadrate, not longer than wide, the last fusiform, as long as 6 and 7 united.

HABITAT.—Arlington, Va., and District of Columbia.

Types in Coll. Ashmead.

Three specimens.

Ceraphron glaber, sp. nov.

♂ ♀. Length, 1.1 to 1.2^{mm}. Agrees very closely with *C. flaviscapus*, but it is slightly larger, the pedicel brown or fuscous, the sixth and seventh flagellar joints distinctly longer than wide, the abdomen longer, being twice as long as the thorax, while the wings are subhyaline or subfuscous.

In the ♂ the antennæ are long, filiform, 11-jointed, the scape yellow, the flagellum brown, the joints loosely joined or slightly pedicellate, rounded at ends, and sparsely pubescent; pedicel small; first funicle joint about thrice as long as thick, the second shorter, the following to

the last about twice as long as thick; collar and petiole yellowish; while the basal joint of hind tarsi is as long as joints 2 to 4 united.

HABITAT.—District of Columbia, and Bladensburg, Md.

Types in Coll. Ashmead.

Three specimens, all taken by Mr. E. A. Schwarz.

Ceraphron carinatus, sp. nov.

♂ ♀. Length, 1.5 to 2^{mm}. Polished black, feebly punctate; antennæ brown-black, except a yellowish ring between the pedicel and first flagellar joint; flagellum very slightly thickened toward tip; pedicel and first flagellar joint very long, the latter slightly the longer, joints 2 to 4 subequal, the second two-thirds the length of the first; joints 5, 6, and 7 about equal, longer than the second; last joint not quite as long as the sixth and seventh united. Thorax with a central grooved line; scutellum a little longer than wide; post-scutellum with a tooth; posterior angles of metathorax acutely prominent; metapleura bounded above by a high carina. Wings subfuscous, the venation brown, the stigmal vein long, curved. Abdomen polished black, 1½ times as long as the thorax, the second segment more than twice as long as the following segments united, striate at base. Basal joint of hind tarsi as long as the following joints united.

In the ♂ the 11-jointed antennæ are long, filiform, the flagellum alone being longer than the body; scape and legs brownish-yellow; flagellum brown-black; first flagellar joint about 5 times as long as thick, the following joints to the last shorter, nearly equal, the last as long as the first; collar and base of abdomen yellowish, the latter not much longer than the thorax.

HABITAT.—Oakland and Bladensburg, Md.; District of Columbia, and Virginia.

Types in Coll. Ashmead and National Museum.

Several specimens.

Ceraphron mellipes, sp. nov.

♂ ♀. Length, 0.8 to 1^{mm}. Polished black, impunctured; scape, pedicel, and legs, bright honey-yellow; tegulæ yellowish; wings clear hyaline. Antennæ in ♀ 10-jointed, the flagellum brown, subclavate, the first funicle joint obconic, two-thirds the length of the scape; joints 2, 3, and 4 as wide as long, fifth subquadrate, sixth and seventh a little longer than wide, the last a little longer than the two preceding united. In the ♂ the antennæ are 11-jointed, filiform, not longer than the body, the first flagellar joint 1½ times as long as thick, longer than the pedicel, the following joints, except the last, scarcely longer than thick, pubescent, the last joint a little longer than the first. In both sexes the face is impressed above the insertion of the antennæ with a grooved line in front of the front ocellus; thorax with a central impressed line;

post-scutellum with a minute tooth, while the posterior angles of meta-thorax are slightly acute.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from 1 ♂ and 2 ♀ specimens. It might be mistaken for *C. flaviscapus*, but it is a smaller and more slender form; the antennæ are not so stout, the joints relatively different in length, while the wings are clearer.

***Ceraphron longicornis*, sp. nov.**

♂. Length, 1.2^{mm}. Highly polished, impunctured; the head and apical two-thirds of abdomen, black; thorax piceous; collar, scape, legs, and basal one-third of abdomen, yellow or flavo-testaceous. The antennæ are long, filiform, 11-jointed, the flagellum brown; first flagellar joint nearly three times as long as the pedicel and as long as the terminal joint; the other joints are slightly shorter, about four times as long as thick, and all with sparse long hairs. Wings hyaline, strongly fringed, the stigmal vein long, curved. The face is impressed above the antennæ; there is a fovea in front of the front ocellus, the mesonotum with a central grooved line, the post-scutellum toothed, while the posterior angles are scarcely prominent, reduced to a minute tubercle.

HABITAT.—Fort George Island, Florida.

Type in Coll. Ashmead.

Described from a single specimen collected by Dr. R. S. Turner.

APHANOGMUS Thomson.

Synarsis Förster, *Kleine Monog.*, p. 57 (1878).

(Type *A. fumipennis* Thoms.)

Head transverse, the frons convex, the occiput slightly excavated and delicately margined; ocelli 3, close together, triangularly arranged; eyes oval or rounded, usually pubescent.

Antennæ inserted just above the clypeus; in ♀ 10-jointed, clavate, in ♂ 11-jointed, subserrate, pilose.

Maxillary palpi 4-jointed, labial palpi 2-jointed.

Mandibles bifid.

Thorax subovoid, compressed at sides, convex above, the collar small; mesonotum usually with a delicate median impressed line, which is often subobsolete or entirely wanting; scutellum conical, convex, at least twice as long as wide, the frenum usually wanting; metathorax very short, abrupt, the angles not prominent.

Front wings pubescent, with a short, linear marginal vein and a short, slightly curved, stigmal vein.

Abdomen ovate, subsessile, compressed beneath, convex above, and a little pointed at tip; the petiole very small and short, the second segment very large.

Legs pubescent, the posterior coxæ pilose behind; the last joint of posterior tarsi about twice as long as the second.

This genus is very closely allied to *Ceraphron* Jurine and it requires great care to separate it from that genus. The frons is more convex, the facial impression less distinct, the scutellum longer and convex, without teeth at base of metathorax; while, as a rule, the metathoracic angles are less distinct.

Synarsis Förster, seems to be without doubt identical, his type *S. pulla* being evidently a small species of *Aphanogmus*, without the central mesonotal furrow and with the head held horizontally, a position often assumed by many species in the group.

All the species known are minute and could easily be mistaken for species in the tribe *Telenomini* in the subfamily *Scelioninae*.

The species known to me in our fauna may be separated by the aid of the following table:

TABLE OF SPECIES.

Winged.....	2
Wingless.	
♂. Black, shining; antennæ dark brown, the third joint the longest, all the flagellar joints with long hairs.....	<i>A. NIGER</i> , sp. nov.
♀. Black; abdomen, legs, and antennæ, except club, bright honey-yellow.	
	<i>A. BICOLOR</i> , sp. nov.
2. Black.	
Wings not banded.....	3
Wings with a fuscous band; no mesonotal furrow.	
Antennæ and legs brown; tarsi pale; stigmal vein oblique, not curved ♀.	
	<i>A. FLORIDANUS</i> , sp. nov.
Antennæ and legs dark fuscous, trochanters and tarsi pale; stigmal vein curved.	
Scape pale ♀	<i>A. VIRGINIENSIS</i> , sp. nov.
Scape and legs pale yellowish; base of abdomen piceous, ♂.	
3. With a mesonotal furrow.	
Antennæ clavate, brown-black; coxæ black; legs dark brown, ♀.	
	<i>A. MARYLANDICUS</i> , sp. nov.
Without a mesonotal furrow.	
Antennæ subclavate, yellow.	
Legs pale yellow, ♀	<i>A. PALLIDIPES</i> , sp. nov.
Antennæ black or brown-black, clavate, the last joint 4 times as long as the penultimate.	
Legs black, coxæ and tarsi brown.. }	<i>A. VARIPES</i> , sp. nov.
Legs rufopiceous (var.)	

Aphanogmus niger, sp. nov.

♂. Length, 1^{mm}. Black, shining; antennæ and legs dark brown, the tarsi whitish. Antennæ 11-jointed, very slightly thickened towards tips; scape obclavate, not reaching beyond the ocelli; first flagellar joint long, about four times as long as the pedicel, the following joints of nearly an equal length, all emarginate at base and covered with long, sparse white hairs. The thorax is compressed, much narrower than the

head, convex above, with a single median impressed line; mesopleura smooth, polished; scutellum fully twice as long as wide, extending to the apex of the metathorax, its tip slightly projecting. Wings aborted. Abdomen small, not as long as the thorax, subpetiolated, highly polished and subcompressed.

HABITAT.—Washington, D. C.

Type ♂ in Coll. Ashmead.

Described from a single specimen, given me by Mr. E. A. Schwarz.

Aphanogmus bicolor, sp. nov.

♀. Length, 0.8^{mm}. Apterous; head and thorax black, microscopically punctulate; antennæ, except the large terminal joint, the legs and the abdomen, bright yellow, the latter with an obscure spot above at tip. The head is large, quadrate; eyes very large, rounded, occupying the whole side of the head, subpubescent. Antennæ 10-jointed, clavate; the scape long, obclavate; the flagellum less than twice as long as the scape; pedicel oval, much stouter and larger than the first flagellar joint; flagellar joints, except the last, submoniliform, increasing in size from the first, which is very small; the last joint is very large, stout, oblong, and as long as the four preceding joints united. Mesonotum with a delicate central grooved line; scutellum extending to the tip of the very short metathorax, convex, longer than wide; angles of metathorax subtubercular, the pleura slightly wrinkled and bounded by a carina above. Abdomen subsessile, as long as the head and thorax together, bright brownish-yellow and highly polished.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Taken by Mr. W. H. Harrington.

Aphanogmus floridanus, sp. nov.

♀. Length, 0.75^{mm}. Polished black; antennæ and legs brown, the scape, trochanters and tarsi pale or yellowish. Thorax compressed, without a median impressed line. Antennæ 10-jointed, clavate, brown, pubescent, the flagellar joints, except the last, transverse, the last ovate; ♂ antennæ 11-jointed, slightly thickened at tips, the first flagellar joint longer than the scape, the following shorter. Wings hyaline, fringed, with a fuscous band across the disk before the marginal vein; stigmal vein oblique, not curved, one and a half times as long as the marginal. Legs brown, the tarsi white. Abdomen polished black; not longer than the thorax.

HABITAT.—Jacksonville, Fla.

Type ♂ ♀ in Coll. Ashmead.

Described from two specimens, taken on the edge of a swamp by sweeping.

Aphanogmus virginiensis, sp. nov.

♀. Length, 1^{mm}. Polished black; antennæ and legs fuscous, the scape, trochanters and tarsi pale or whitish. Thorax compressed, convex, without a median impressed line. Antennæ 10-jointed, subclavate, pubescent, the flagellar joints, except the first and the last, transverse quadrate, the last conic. Wings hyaline, fringed, with a fuscous band below the region of the parastigma, the stigmal vein curved. Abdomen conic-ovate, black and polished, as long as the head and thorax together.

HABITAT.—Arlington, Va.

Type ♀ in Coll. Ashmead.

Described from several specimens. The species comes close to *A. floridanus*, but it is slightly larger, the antennæ slenderer, the abdomen longer, more pointed, while there is a distinct curve to the stigmal vein.

Aphanogmus marylandicus, sp. nov.

♀. Length, 1^{mm}. Polished black; antennæ wholly brown-black; legs dark-brown, the coxæ black, knees and tarsi pale or yellowish. Thorax compressed, highly convex, shining, with a distinct median impressed line. Antennæ 10-jointed, clavate, the flagellar joints, except the last, transverse; the last very large, ovate. Wings clear hyaline, fringed, the stigmal vein long and curved. Abdomen pointed, ovate, subcompressed, as long as the head and thorax together, black and polished.

HABITAT.—Oakland, Md.

Type ♀ in Coll. Ashmead.

Described from one specimen received from Mr. E. A. Schwarz. This may be the ♀ of *A. niger*.

Aphanogmus pallidipes, sp. nov.

♀. Length, 0.8^{mm}. Black, shining; antennæ brownish-yellow; legs pale yellow. Antennæ 10-jointed, subclavate, the flagellar joints all a little longer than thick, the last conic. Thorax compressed, convex, without a median impressed line. Wings clear hyaline, the nervures brown, the stigmal vein a little longer than the marginal, slightly curved. Abdomen a little longer than the thorax, ovate, pointed at tip, subcompressed, black and shining.

HABITAT.—Arlington, Va.

Type ♀ in Coll. Ashmead.

Described from a single specimen.

Aphanogmus varipes, sp. nov.

(Pl. VII, Fig. 1, ♀.)

♀. Length, 0.8^{mm}. Black, shining; antennæ and legs vary from brown or rufous to black; the trochanter and tarsi pale brownish-yellow. Antennæ 10-jointed, clavate, the last joint very large, about four

times as large as the penultimate, the two preceding joints transverse, the others a little longer than wide, the first flagellar joint being scarcely as long as the pedicel. Thorax convex, without a trace of a furrow. Wings hyaline, pubescent, the parastigma as long and thick as the marginal vein, the stigmal vein very little longer than the marginal. Abdomen not longer than the thorax.

HABITAT.—Manhattan, Kans.

Types in Kansas State Agricultural College and Coll. Ashmead.

Described from two specimens received from Prof. Popenoe.

NEOCERAPHRON Ashm., gen. nov.

Agrees in all particulars with *Ceraphron*, except that the antennæ in the male are 10-jointed, not 11-jointed, and in female 9-jointed, not 10-jointed, the flagellum being strongly clavate.

Neoceraphron macroneurus, Ashm.

(Pl. VII, Fig. 3, ♂.)

Ceraphron macroneurus Ashm., Ent. Am., III, p. 97, ♂; Cress. Syn. Hym., p. 312.

♂. Length, 0.8^{mm}. Polished black, impunctured; abdomen yellow, blackish above towards apex; legs yellowish-white; antennæ 10-jointed, filiform, reaching to the base of the abdomen, dark-brown, the scape brownish-yellow, the flagellar joints, except the first and last, not longer than wide, loosely joined, moniliform, pubescent, the last joint twice as long as the first. Wings hyaline, the marginal vein linear, the stigmal vein very long, curved, almost attaining the apex of wing, forming a large marginal cell.

♀. Length, 0.75 ^{mm}. Black, polished, impunctured, the abdomen honey-yellow, blackish above; legs whitish; antennæ 9-jointed, brownish-yellow, fuscous toward tips, the flagellum much incrassated towards apex, all the joints, except the first, which is as long as thick, are wider than long, the last large, fusiform.

HABITAT.—Jacksonville, Fla., and Virginia.

Types in Coll. Ashmead.

Subfamily V.—**SCELIONINÆ**.

Head transverse or quadrate, often very broad and large. Ocelli 3, always present. Mandibles most frequently bidentate, although occasionally 3-dentate. Antennæ elbowed, inserted on a clypeal prominence or at the base of the clypeus, usually clavate, 11- or 12-jointed in the females, or if the club is unjointed, but 7-jointed; in the males filiform or setaceous, 12-jointed except in *Scelio*, where they are but 10-jointed. Maxillary palpi 2, 3, 4, or 5-jointed, labial palpi 2- or 3-jointed. The pronotum is often not visible from above, or it is large, transverse, or quadrate; mesonotum generally short, transverse, with or without grooved furrows; scutellum generally semicircular, the axillæ not distinctly separated; it is rarely spined or wanting, although the post-

scutellum is frequently spined; metathorax short, frequently with acute angles or spines. Front wings most frequently with submarginal, marginal, post-marginal, and stigmal veins; the post-marginal and marginal veins are rarely absent, except in the tribes *Bæini* and *Teleasini*; if absent, in the tribe *Scelionini*, the submarginal vein terminates in a stigma or knob. Abdomen sessile, or subsessile, inserted above the coxæ, depressed and sharp-edged or strongly carinated along the sides, where the tergites join the urites; in shape it is variable: it may be broadly oval, oblong, ovate, fusiform, or linear, and often greatly elongated, composed of several segments; the second and third segments are usually much the largest, but occasionally the segments are nearly of an equal length. Legs moderate, the femora clavate, the tibiæ subclavate or slender, the tibial spurs usually 1, 1, 1, the middle and posterior spurs generally weak or poorly developed; the tarsi long, slender, 5-jointed.

This group is probably the most extensive one in the whole family and of the greatest economic importance, all the species comprising it being strictly egg parasites, scarcely a single order of insects being free from their attack.

It may be subdivided into four natural tribes distinguished as follows:

TABLE OF TRIBES.

Abdomen without distinct lateral carinæ, most frequently broadly oval, rarely pointed ovate, depressed, the second segment always the largest and longest; post-marginal and stigmal veins long; ♀ with 11-jointed antennæ, rarely with 12 joints, clavate; ♂ antennæ 12-jointed.

Tribe I.—TELENOMINI.

Abdomen always with distinct lateral carinæ.

Abdomen broadly oval or long oval, the third segment much the longest; post-marginal vein not developed.

Marginal vein very short, punctiform or thickened, not or scarcely as long as the stigmal vein; stigmal vein short, thickened at base and ending in a rounded stigma; ♀ antennæ 7-jointed with an unjointed club; ♀ usually apterous; ♂ antennæ 12-jointed, filiform-moniliform; lateral ocelli usually close to the inner margin of the eye. Tribe II.—BÆINI.

Marginal vein very long, 5 or 6 times as long as the exceedingly short stigmal vein; stigmal vein not thickened at base; ♀ antennæ 12-jointed, clavate, the club 5 or 6 jointed; ♂ antennæ 12-jointed, filiform, the funicular joints long; lateral ocelli far away from the inner margin of the eye, never very close Tribe III.—TELEASINI.

Abdomen sessile, most frequently long, fusiform, or linear, extending beyond the tips of the wings when folded, rarely broadly oval, the segments more nearly equal, or the third segment the longest, but rarely much longer than some one of the others; post-marginal vein present, rarely wanting, if wanting the submarginal vein terminating in a stigma; marginal vein seldom twice as long as the stigmal; the stigmal not especially short, oblique, rarely entirely absent; ♀ antennæ 12-jointed, clavate; ♂ antennæ 12-jointed, usually filiform (in a single case 10-jointed) Tribe IV.—SCELIONINI.

Tribe I.—TELENOMINI.

This tribe was first separated by Thomson, Öfvers. af K. Vet.-Akad. Förh., 1860, p. 169, with two genera, *Telenomus* and *Phanurus*, to which I here add *Trimorus* Förster, and three new genera, viz., *Trissolcus*, *Dissolcus*, and *Aradophagus*, all distinguished from other genera in the *Scelioninae* by the absence of the lateral carinae on the abdomen.

The species are all minute or microscopic in size, and are parasitic in the eggs of various insects, those of Lepidoptera and Hemiptera being particularly subject to their attack.

The six genera included in the tribe may be thus distinguished:

TABLE OF GENERA.

Females, with 11-jointed, clavate antennae.....	2
Females, with 12-jointed antennae.....	4
2. Lateral ocelli not touching the margin of the eye.....	3
Lateral ocelli touching the margin of the eye.	
Mesonotum with 2 furrows.	
Post-scutellum spined.....	TRIMORUS Förster.
Mesonotum without furrows.	
Post-scutellum not spined.	
Head quadrate; abdomen pointed ovate, the ovipositor usually exserted.....	PHANURUS Thom.
Head transverse, often very broad, abdomen broadly oval, usually truncate at tip.....	TELENOMUS Hal.
3. Mesonotum with 3 furrows, abbreviated anteriorly.	
Frons very broad; a short but distinct groove extends from the eye back of the lateral ocellus to the occiput..	TRISSOLCUS Ashm., gen. nov.
Mesonotum with 2 furrows, abbreviated anteriorly.	
Frons not very broad.....	DISSOLCUS Ashm., gen. nov.
4. Mesonotum without furrows.	
Head large, flat, the ocelli in a triangle, the laterals nearer to the front ocellus than to margin of eye; wings banded.	
	ARADOPHAGUS Ashm., gen. nov.

TRIMORUS Förster.

Hym. Stud., II, p. 101 (1856).

(Type *P. nanno*, Walk., ♂; *P. philias*, Walk., ♀.)

Head transverse, a little wider than the thorax, the occiput delicately margined; ocelli 3, the lateral close to the eye; eyes ovate; subpubescent.

Antennae in both sexes 12-jointed; in ♀ clavate, the club 5-jointed; in ♂ filiform-moniliform or submoniliform.

Maxillary palpi 3-jointed.

Mandibles bifid.

Thorax ovoid, the prothorax depressed above, produced into a little neck anteriorly; mesonotum with 2 furrows; scutellum convex, semi-

circular; post-scutellum armed with a short, stout spine or tooth; metathorax short.

Front wings fringed, with a marginal vein about half the length of the stigmal, the latter oblique, ending in a small knob.

Abdomen oval, depressed, somewhat broader than the thorax; the first segment short, striate, the second very large, the following short.

Legs rather long, slender, the femora subclavate, tarsi 5-jointed, the basal joint of hind tarsi more than three times as long as the second.

Distinguished by the spined scutellum.

Trimorus americanus, sp. nov.

(Pl. VII, Fig. 4, ♂.)

♂. Length, 1.2mm. Polished black, impunctured, sparsely pubescent. Head transverse, not wider than the thorax; lateral ocelli on the margin of the eye; eyes oval, pubescent. Antennæ 12-jointed, filiform-moniliform, extending to the middle of the abdomen; the scape scarcely reaches to the middle ocellus, brownish-yellow; the flagellum rust-brown, the pedicel very small, the first and third funicle joints equal, twice as long as the pedicel, the second slightly smaller than the first, the fourth and the following to the last about equal, moniliform, the last oval.

Thorax ovoid, the mesonotum with 2 furrows abbreviated anteriorly; scutellum semicircular; the post-scutellum produced into a small triangular tooth; metathorax very short. Abdomen oval, black, not longer than the thorax, the first segment striated. Wings hyaline, pubescent, the venation brown; the marginal vein is rather thick, the length of the shaft of the stigmal, the latter terminating in a small knob.

HABITAT.—Arlington, Va.

Described from a single specimen.

PHANURUS Thomson.

Öfv., 1860, p. 169.

(*P. angustatus* Thom.)

Head quadrate or subquadrate, the frons smooth, shining, the occiput usually but slightly emarginate, not margined. Ocelli 3, triangularly arranged, the lateral touching the margin of the eyes. Eyes large, oval, sometimes slightly pubescent.

Antennæ in ♀ 11-jointed, subclavate, rarely distinctly clavate, from the last two funicle joints being widened; in ♂ 12-jointed, submoniliform, shorter than the body; the pedicel longer than the first funicle joint, the second funicle joint about twice as long as the first, the third shorter, joints beyond moniliform or submoniliform, the last ovate.

Maxillary palpi 2-jointed.

Mandibles bifid.

Thorax ovate or long ovate, the mesonotum longer than wide, without furrows, the metathorax not especially shortened.

Front wings rather narrowed, longly fringed, the marginal vein very short, the stigmal vein rather long, very oblique, the post-marginal long.

Abdomen long, pointed ovate and at least as long as the head and thorax together, and narrower, the ovipositor often exerted, the second segment very long, occupying two-thirds the whole surface.

Legs rather long and but slightly thickened.

Although this genus closely resembles *Telenomus*, it is readily distinguished by the shape of the head, the subclavate antennæ, narrower wings, and the longer, narrower, pointed abdomen, the second segment always being two or three times longer than wide.

The habits of the genus are identical with *Telenomus*.

Our species may be tabulated as follows:

TABLE OF SPECIES.

Head and thorax dark brown.....	2
Black.	
Antennæ black or brown black.	
Legs brownish-piceous, the knees and tarsi pale.....	P. OVIVORUS, sp. nov.
Legs rufous, the tarsi white.....	P. FLORIDANUS, sp. nov.
Scape pale rufous, the flagellum brown.	
Legs yellow.....	P. FLAVIPES, sp. nov.
2. Abdomen pale brown.....	P. OPACUS How.

Phanurus ovivorus, sp. nov.

♀. Length 0.6^{mm}. Polished black, impunctured. Head transverse-quadrate, scarcely wider than the thorax. Eyes oval, with a few hairs. Antennæ 11-jointed, subclavate, brown-black or black, the flagellum nearly thrice as long as the scape, the pedicel longer than the first funicular joint, the joints of funicle all longer than thick, the club scarcely separable from the 4-jointed funicle, the joints a little longer than wide. Thorax ovoid, the disk somewhat flattened and highly polished, the mesonotum longer than wide, without furrows. Legs piceous, the knees and tarsi paler. Abdomen pointed ovate, depressed, flat above and longer than the head and thorax together, the ovipositor slightly projecting. Wings rather narrow, hyaline, iridescent, and ciliated, the nervures yellow, the marginal vein shorter than the stigmal.

HABITAT.—Washington, D. C.

Types in National Museum and Coll. Ashmead.

Bred by Dr. Riley at Washington, D. C., September 10, 1885, from Heteropterous eggs; also from Curculionid in catkins of Black Birch, June 19, 1889. The last record I consider unreliable. In all probability there were insect eggs in the catkins overlooked by Dr. Riley. My collection contains specimens captured at large.

Phanurus floridanus, sp. nov.

(Pl. VII, Fig. 5, ♀.)

♀. Length 0.6^{mm}. Polished black, impunctured. Head subquadrate, as wide as the thorax. Antennæ 11-jointed, clavate, black, the

club stouter than in *P. ovivorus*; pedicel much longer and thicker than the first funicular joint, the funicular joints after the second, transverse, the club 4-jointed, the joints excepting the last transverse, the last ovate. Legs pale brownish-yellow, the coxæ black or dark fuscous. Abdomen pointed ovate, about as long as the head and thorax together, the first segment short, narrowed, the second occupying half the rest of the surface, the segments beyond short, about equal. Wings hyaline, ciliated, the venation yellowish, the marginal vein about one-third the length of the stigmal.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Phanurus flavipes, sp. nov.

♀. Length, 0.65^{mm}. Polished black. Head quadrate, a little wider than the thorax across from tegula to tegula, and with the occiput slightly emarginated. Eyes large, oval, subpubescent. Mandibles pale or yellowish. Antennæ 11-jointed; the scape is half the length of the flagellum, pale rufous or yellowish; the flagellum subclavate, brown, the pedicel about 2½ times as long as thick or nearly twice as long as the first funicular joint, the two last funicular joints a little shorter and stouter than the preceding joints, club joints stouter, a little longer than thick. Legs, including coxæ, bright yellow. Abdomen as long as the head and thorax together, polished, impunctured, the second segment nearly twice as long as wide at apex, the first short and narrow. Wings hyaline, somewhat narrowed, with long cilia.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen.

The color of the antennæ and legs readily separate the species from all the others.

Phanurus opacus How.

Thoron opacus How., Ins. Life, I, p. 268, f. 64.

“♂. Length, 0.84^{mm}; expanse, 1.2^{mm}; greatest width of forewing, 0.163^{mm}; length of antennæ, 0.6^{mm}. Joint 1 of funicle rather shorter and slightly narrower than pedicel; funicle joints distinctly separated, subequal in length, increasing very slightly in width from 4 to 9, joints 2 and 3 equal in width and slightly slenderer than either 1 or 4; club one-third longer than joint 9 of funicle, ovate, at base of same width as joint 9 of funicle, without a trace of dividing sutures. Metanotal spiracles large, oval; metascutellum with a straight median longitudinal furrow. Abdomen flattened, ovate, rather longer than thorax. General surface of the body with no visible punctation, opaque. Head, antennæ, and thorax dark brown; abdomen rather lighter; all legs brown; tarsi nearly white; base of all tibiæ nearly white. Wings hyaline; veins slightly dusky.” (*Howard.*)

HABITAT.—Los Angeles, Cal.

According to Mr. Howard this insect was reared by Mr. D. W. Coquillett, July 27, 1887, from the adult female of *Icerya purchasi*. I am not willing to accept this statement as accurate, the species being an egg-parasite. As with the European *Telenomus coccidivorus*, additional evidence is needed to substantiate its divergent habit.

TELENOMUS Haliday.

Ent. Mag. I, p. 271 (1833).

Syn. (†) *Hemiteius* Westwood, Phil. Mag., II, p. 445 (1832).

(Type *T. brachialis* Hal.)

Head large, transverse, usually very wide, very rarely quadrate, the occiput concave, not margined. Ocelli 3, triangularly arranged and widely separated, lateral contiguous to the margin of the eye. Eyes oval, often pubescent.

Antennæ inserted close to the clypeus, in ♀ 11-jointed, clavate, the club 4- or 5-jointed, the pedicel usually larger than the first funicle joint, the first funicle joint longer than wide, the last two funicle joints minute, transverse; in ♂ filiform, pubescent, moniliform or submoniliform, the joints after the fifth rarely elongate-cylindric.

Maxillary palpi 2-jointed.

Thorax ovoid, the mesonotum wider than long, without furrows; the metathorax short, rounded, unarmed.

Front wings pubescent, ciliated, the submarginal vein joining the marginal at about $\frac{1}{4}$ the length of the wing, the marginal vein linear, rarely punctiform, and usually shorter than the stigmal, the latter oblique and rather long, the post-marginal vein long.

Abdomen subsessile, broadly oval, depressed, not or rarely longer than the thorax, the apex usually truncate, the first segment wider than long, the second always the largest and longest segment, although often wider than long; the following segments all short.

Legs moderate, the femora subclavate, the tibial spurs weak, the tarsi 5-jointed, not as long as the tibiæ.

A well-known and widely distributed genus found in all parts of the world. Haliday and Walker have described in it species that should now be relegated to *Phanurus*. The species are numerous and probably susceptible of a still further generic subdivision.

The description of Westwood's genus *Hemiteius*, with one species, *minutus*, appeared in the Phil. Mag, Vol. II, p. 445, 1832, and consequently antedates that of Haliday (which did not appear until 1833) just one year. From Westwood's brief description I am unable to separate it from *Telenomus*, and if *Telenomus* is not again subdivided it must replace that now well-known genus.

Species of the genus *Telenomus*, according to Dr. Gustav Mayr, have been reared in Europe from the following insect eggs:

Lepidoptera.....	13 species.
Hemiptera.....	3 species.
Diptera.....	1 species.

He also records the rearing of *Telenomus coccidivorus* Mayr from a coccid; but in all probability this is a mistake, and it came from the egg of some Lepidopteron, Syrphid, or other predaceous insect associated with the coccid.

In America *Telenomi* have been reared from the following insect eggs:

	Species.
Lepidoptera	14
Hemiptera	3
Neuroptera	1

Our species are quite numerous and separated with difficulty, but it is hoped that the student will find assistance in the following dichotomous table:

TABLE OF SPECIES.

FEMALES.

- Second abdominal segment not, or very little, longer than wide..... 2
 Second abdominal segment about twice as long as wide.
 Head transverse-quadrate.
 Legs, including coxæ and scape, reddish-yellow; thorax flattened.
 Moderate..... T. HUBBARDI, sp. nov.
 Legs, including coxæ and scape, pallid yellow; thorax convex.
 Minute..... T. PUSILLUS, sp. nov.
 Head transverse.
 Legs and antennæ black, knees and tarsi honey-yellow... T. KOEBELEI, sp. nov.
2. Pedicel distinctly longer and thicker than the first funicle joint..... 3
 Pedicel not longer than the first funicle joint.
 Scape black, flagellum brown-black, tip of pedicel yellow, funicle joints 2, 3, and 4 equal, moniliform.
 Legs black or piceous, trochanters, knees, anterior tibiæ, and tarsi, yellow.
 T. NIGRISCAPUS, sp. nov.
 Antennæ brown-black, pedicel yellow at tip, shorter than first funicle joint, funicle joints 2 and 3 subequal, the third transverse.
 Legs piceous, trochanters, anterior tibiæ beneath and tarsi, brown.
 T. UTAHENSIS, sp. nov.
3. Scape of antennæ pale or pale at base or tip 4
 Scape of antennæ black or brown-black.
 Coxæ pale.
 Marginal vein punctiform.
 Claval joints 2, 3, and 4 about equal, quadrate T. NOCTUÆ, sp. nov.
 Coxæ black.
 Funicular joints 2 and 3 longer than thick.
 Legs black or piceous, trochanters, knees, tips of tibiæ and tarsi, yellow.
 First abdominal segment and the second, at base, striate.
 Marginal vein $\frac{1}{2}$ the length of the stigmal.
 Second abdominal segment wider than long... T. GNOPHELE, sp. nov.
 Second abdominal segment longer than wide.
 T. CALIFORNICUS, sp. nov.
 Marginal vein punctiform..... T. GRACILICORNIS, sp. nov.
 Legs pale rufous.
 Thorax and scutellum closely punctate; head large, polished.
 T. PERSIMILIS, sp. nov.

Funicle joints 2 and 3 rounded, not longer than thick.

Legs piceous or brown-black, trochanters, knees, tips of tibiae and tarsi pale or yellowish.

First abdominal segment striate.

Marginal vein $\frac{1}{2}$ the length of the stigmal; head $3\frac{1}{2}$ times as wide as long.....T. GRAPTÆ How.

Marginal vein nearly $\frac{1}{2}$ the length of the stigmal; head 3 times as wide as long.....T. SPILSOMATIS, sp. nov.

Marginal vein as long as the stigmal.....T. MINIMUS, sp. nov.

Legs dark-brown, the tarsi whitish.

Marginal vein about $\frac{1}{2}$ the length of the stigmal...T. HELIOTHIDIS, sp. nov.

Legs piceous or brown-black, trochanters, knees, tips of tibiae and tarsi, pale or yellowish.

First abdominal segment not striate.

Eyes pubescent.....T. ORGYLÆ, Fitch

Eyes bare or only faintly pubescent.

Marginal vein punctiform.....T. ICHTHYURÆ, sp. nov.

Marginal vein long.....T. INFUSCATIPES Ashm.

Legs yellow or brownish-yellow.

Marginal vein $\frac{1}{2}$ the length of the stigmal; head about $3\frac{1}{2}$ times as long as wide.....T. BIFIDUS, Riley

4. Scape wholly pale..... 5

Scape not wholly pale, pale beneath or at base or apex.

Coxæ black or piceous.

Wings with a dusky submarginal blotch.....T. MACULIPENNIS, sp. nov.

Wings with no submarginal blotch, hyaline or subhyaline.

Funicle joints 2 and 3 not longer than thick.

Coxæ black.

Legs dark brown or fuscous, trochanters, knees and tarsi, pale yellow.

Second abdominal segment $1\frac{1}{2}$ times as long as wide

T. SPHINGIS Ashm.

Second abdominal segment not or scarcely longer than wide.

Head very wide.

Funicle joints 2 and 3 subequal.....T. RILEYI How.

Funicle joints 2 and 3 equal.....T. GOSYPHICOLA, sp. nov.

Coxæ pale.

Legs brown, the trochanters, knees, tips of tibiae and tarsi, whitish or pale. Pedicel longer and stouter than the first funicular joint, the second very little longer than thick, the third small, transverse.

T. GEOMETRÆ, sp. nov.

5. Pedicel scarcely longer than the first funicular joint.

Second abdominal segment not striate at base.

Legs rufous or reddish-yellow, the femora and tibiae often obfuscated.

T. ARZAMÆ Riley.

Legs brownish-yellow.....T. LAVERNÆ, sp. nov.

Pedicel much longer than the first funicular joint.

Closely minutely punctate.

Second abdominal segment striate at base.

Legs, including coxæ, honey-yellow.....T. PODISI, sp. nov.

Coarsely cribrate punctate.

Mesopleura tinged with rufous.

Legs and antennæ, except club, brownish-yellow.

T. PENNSYLVANICUS, sp. nov.

MALES.

- Antennæ not, or scarcely, longer than the body 2
 Antennæ much longer than the body.
 Legs pale brownish-yellow; joints of flagellum oval... T. DOLICHOCERUS Ashm.
2. Flagellar joints 1 and 2 equal, or nearly equal 4
 Flagellar joints 2 and 3 about equal, longer than the first 3
 Flagellar joints 2 and 3 about equal, shorter than the first.
 Coxæ black.
 Legs fuscous or brown, knees, tibiæ, and tarsi yellow; marginal vein half the length of the stigmal T. CHRYSOPÆ, sp. nov.
 Legs honey-yellow, the femora, except tips, brown; marginal vein one-fourth the length of the stigmal T. UTAHENSIS, sp. nov.
3. Coxæ black.
 Pedicel longer than the first funicular joint.
 Legs pale brownish-yellow, the femora usually more or less dusky.
 Flagellar joints, after the third, moniliform..... T. SPILOSOMATIS Ashm.
 Flagellar joints, after the third, long oval..... T. SPHINGIS Ashm.
 Pedicel shorter than the first funicular joint.
 Legs black or piceous, trochanters, knees, tips of tibiæ, and tarsi honey-yellow.
 Scape black, flagellum dark brown T. GRAPTÆ How.
 Scape and flagellum pale brown T. CÆLODASIDIS sp. nov.
- Coxæ pale.
 Pedicel shorter than the first funicular joint.
 Legs honey-yellow; flagellar joints longer than thick..... T. ARZAMÆ Riley.
 Legs reddish-yellow; flagellar joints round, moniliform. T. NIGRISCAPUS Ashm.
 Pedicel a little longer than the first funicular joint.
 Legs whitish, the femora and tibiæ tinged with brown; flagellar joints transverse..... T. GEOMETRÆ Ashm.
4. Flagellar joints 1 and 2 about equal, the third shorter.
 Coxæ black.
 Legs black or piceous, the trochanters, tips of femora, and tibiæ and the tarsi honey-yellow T. CLISIOCAMPÆ Riley
- Coxæ pale.
 Legs brownish-yellow; flagellar joints 1 to 3 not especially elongate, the joints beyond transverse..... T. BIFIDUS Riley
 Legs yellow; flagellar joints 1 to 3 stout and elongate, the joints beyond moniliform T. PODISI Ashm.
 Flagellar joints 1 and 2 about equal, the third longer.
 Legs, including coxæ, pale brownish-yellow T. NOCTUÆ
 Flagellar joints 1 and 2 equal, the joints beyond oval. Coxæ black; legs reddish-yellow T. GNOPHÆLÆ

T. dolichocerus Ashm.

Teles dolichocerus Ashm., Ent. Am., III, p. 100, ♂; Cress. Syn. Hym., p. 313.

♂. Length, 0.8^{mm}. Black, shining; the thorax microscopically punctate and pubescent; antennæ black, the scape beneath brownish-yellow; legs yellow. Antennæ 12-jointed, very long, filiform, much longer than the body, pubescent; the pedicel is hardly half the length of the first funicular joint; the latter is stouter than the pedicel or any of the following joints, about twice as long as thick; the second funicular joint is greatly elongated, longer than the pedicel and the first joint united;

the 3 following joints subequal; those beyond, to the last, elliptic, oval; the last fusiform, as long as the third; all the joints from the third briefly pedicellated. Wings hyaline, with long cilia; the venation pale brown, the marginal vein half the length of the shaft of the stigmal, the latter ending in a knob.

HABITAT.—Jacksonville, Fla.

Type, ♂ in Coll. Ashmead.

Described from a single specimen. The greatly elongated antennæ and the shape of the joints render the species easy of recognition.

***Telenomus Hubbardi*, sp. nov.**

♀. Length, 1^{mm}. Black, smooth, shining; head quadrate, not wider than the thorax; mandibles piceous. Antennæ 11-jointed, the scape reddish-yellow, the flagellum dark brown; the pedicel is much longer than the first funicular joint; the second, third, and fourth funicular joints nearly equal, the second being very slightly the longest; the club is stout, the joints broadly transverse. Thorax subconvex, much longer than wide. Legs, including coxæ, uniformly reddish-yellow. Abdomen as long as the head and thorax together, the apex subtruncate, highly polished; the first segment transverse, with some coarse striae at base; the second segment long, twice as long as wide; the following segments very short, equal, but all distinctly visible. Wings hyaline, fringed, the venation yellowish, the marginal vein punctiform.

HABITAT.—Centerville, Fla.

Type in National Museum.

Described from a single specimen received from Mr. H. G. Hubbard, reared September 4, 1880, from the eggs of a Reduviid.

***Telenomus pusillus*, sp. nov.**

♀. Length, 0.6^{mm}. Black, shining; head transverse quadrate, polished; eyes pubescent; thorax microscopically punctate; scape and legs pallid yellow or whitish. Antennæ 11-jointed, the flagellum brownish; pedicel nearly twice as long as the first funicular joint; first and second funicular joints equal; the third and fourth shorter, subequal, the fourth being transverse. Wings hyaline, fringed; the nervures pale yellowish, the marginal nervure being one-half the length of the shaft of the stigmal. Abdomen not quite as long as the head and thorax united, triangularly pointed at apex, when viewed from above, polished; the first segment narrow, striated; the second, widened at apex, but still twice as long as wide at apex.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Its minute size and pallid legs distinguish it from *T. Hubbardi* with which it agrees in the shape of the head and the abdomen.

Telenomus Koebelei, sp. nov.

♀. Length, 1^{mm}. Black, shining, the thorax finely punctate, devoid of pubescence, scutellum smooth, polished. Head transverse-quadrate, as wide as the thorax, the face rather flat, smooth. Eyes with a fine pubescence. Mandibles black. Antennæ 11-jointed, rather short, black, the pedicel longer than the first funicular joint, the second subequal with the first, the third much shorter than the second; the club is gradually fusiform from the fourth funicular joint, the first and second joints transverse-quadrate, the third quadrate, the fourth slightly smaller than the third quadrate, the last cone-shaped. Legs black; trochanters, a small spot on knees, and the tarsi, dull honey-yellow. Abdomen a little longer than the thorax, smooth, shining, the first segment, and the second at base, striated; the second segment is at least 1½ times longer than wide; all the following segments are exceedingly short, but distinct, in this respect differing from the typical forms in the genus. Wings hyaline, with a short fringe; the venation yellowish, the marginal vein half the length of the stigmal.

HABITAT.—Alameda, Cal.

Types in National Museum.

Described from three specimens reared by Mr. A. Koebele from an egg of some large unknown bombycid, probably an *Attacus*.

Telenomus nigricapua, sp. nov.

♂ ♀. Length, 0.8^{mm}. Black, shining, the thorax with a fine white pubescence. Head very broad, the face polished. Mandibles black. Antennæ in ♀ 11-jointed, the scape black, the flagellum brown-black, tip of pedicel yellowish; the pedicel is not longer than the first funicular joint; the second, third, and fourth funicular joints are about equal, moniliform, the first four joints of club transverse-quadrate. Thorax convex. Legs black, the trochanters, anterior tibiæ, and all knees and tarsi, honey-yellow, the middle and hind tibiæ piceous. Abdomen fully as long as the thorax, truncate at tip, polished, the second segment about one-fourth longer than wide. Wings hyaline, fringed, the venation pale yellowish; the marginal vein is at least one-third the length of the stigmal.

In the ♂ the legs, including the coxæ, are uniformly reddish-yellow; antennæ 12-jointed, pale brown, the scape paler; the pedicel is distinctly smaller than the first funicular joint, the second and third a little longer and stouter than the first, the joints beyond to the last round-moniliform, the last conic, twice as long as the penultimate.

HABITAT.—Agricultural College P. O., Mich.

Types in National Museum.

Described from 1 ♂ and 1 ♀ received from Prof. A. J. Cook.

Telenomus utahensis, sp. nov.

♂ ♀. Length, 0.8^{mm}. Black, shining; the thorax microscopically punctate, covered with a fine pubescence; the head very little more than thrice as wide as long, finely shagreened; antennæ black, the pedicel at tip tinged with yellow; legs black, trochanters, knees, anterior tibiæ, except sometimes a blotch above, and the tarsi, honey-yellow. Antennæ in ♀ 11-jointed, the first funicular joint longer than the pedicel, the second half the length of the first, the third and fourth short, transverse; the fourth the broader, nearly as wide as the club; the club joints quadrate, the first the largest and a little the broadest, last joint conic. Wings subhyaline, pubescent, iridescent, with short cilia, the nervures brown, the marginal about one-third the length of the stigmal.

Abdomen broadly oval, truncate at apex, the petiole striate, the second segment one-half broader than long.

In the ♂ the antennæ are 12-jointed, filiform, the first funicular joint about twice as long as the pedicel, the second and third funicular joints a little shorter than the first, subequal; the joints beyond, to the ninth, moniliform; the ninth, a little longer than thick, and two-thirds the length of the last joint, which is pointed, conic.

HABITAT.—Wasatch and Salt Lake, Utah.

Types, ♂ and ♀, in Coll. Ashmead.

Described from specimens received from Mr. E. A. Schwarz; collected June 13 and 27, 1891.

Telenomus noctuæ, sp. nov.

♂ ♀. Length, 0.6^{mm}. Black, polished, pubescent, the thorax highly convex, microscopically punctate; antennæ in ♀ brown-black, in ♂ yellow; legs yellow to brownish-yellow, the femora and tibiæ in the ♀ dusky. Head about thrice as wide as long antero-posteriorly. Eyes pubescent. Antennæ ♀ 11-jointed, less than twice as long as the scape; the pedicel is stouter, and nearly twice as long as the first funicular joint, the latter only a little longer than thick, the second moniliform, the third and fourth equal, transverse-moniliform; the club rather stout, the first joint transverse, twice as wide as long, the second, third, and fourth joints about equal, transverse-quadrate, a little broader than long, the last conic. Wings hyaline, ciliated, the nervures brownish-yellow, the marginal vein punctiform, about twice as long as thick. Abdomen not quite as long as the thorax, truncate behind, the second segment wider than long.

In the ♂ the antennæ are 12-jointed, filiform-moniliform, yellow, the joints loosely articulated, with short bristly hairs; the pedicel is smaller than the first funicular joint; the first three funicular joints are elongate, the second being a little the largest, the third the smallest, the follow-

ing joints to the last moniliform, briefly pedicellate, the last cone-shaped, as long as the first; legs yellow.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead.

Described from many specimens reared in June from the eggs of an unknown Noctuid moth.

***Telenomus gnophælae*, sp. nov.**

♂ ♀. Length, 0.8^{mm}. Black, shining, the thorax microscopically punctate. Head transverse, wider than the thorax, the face polished, impunctured, the vertex faintly shagreened. Eyes slightly bristly. Mandibles rufous. Antennæ ♀ 11-jointed, black, the pedicel much longer than the first funicular joint, the second funicular joint very slightly shorter than the first, the third not more than half the length of the second, the club much more slender than usual. Legs black; trochanters, knees, base and apex of tibiæ, and the tarsi, honey-yellow. Abdomen shorter than the thorax, broadly truncate behind, the first and second segments at base, striate, the second being broader than long. Wings hyaline, fringed, the venation brown, the marginal vein half the length of the stigmal.

In the ♂ the antennæ are 12-jointed, filiform, brown, the pedicel smaller than the first funicular joint, the first and third funicular joints about equal, the second very slightly longer than either of the others, the joints beyond to the last, moniliform, the last conic, twice as long as the penultimate; legs reddish-yellow, the coxæ dusky or black.

HABITAT.—Sisson, California.

Types in National Museum.

Described from many specimens reared August 24, 1890, by Mr. A. Koebele, from the eggs of *Gnophala hopferi* Grote.

***Telenomus gracilicornis*, sp. nov.**

♀. Length, 0.8^{mm}. Head, scutellum, and abdomen polished black, shining; thorax microscopically punctate, subopaque, with a fine pubescence; scape black, the flagellum brown black, the pedicel yellowish at tip; legs black; the trochanters, knees, anterior tibiæ, except a blotch above, and the tarsi, honey-yellow. Antennæ 11-jointed, the club rather slender; the flagellum twice as long as the scape; the first funicular joint is about two-thirds the length of the pedicel, the second a little shorter than the first but still a little longer than thick; the third and fourth moniliform, about equal in size; the first joint of club is submoniliform, transverse, a little larger than the last funicular joint, the second, transverse-quadrate, the third and fourth quadrate, slightly longer than the second, the last pointed, conic. Wings subfuscous, the venation brown, the marginal vein punctiform, hardly twice as long as thick. Abdomen not longer than the thorax, truncate at apex, spatu-

late, not striate basally, the second segment scarcely longer than wide at apex.

HABITAT.—Ottawa, Canada.

Type, ♀, in Coll. Ashmead.

Described from a single specimen.

Telenomus californicus, sp. nov.

♀. Length, 0.8^{mm}. Black, shining, the thorax microscopically punctate and covered with a fine pubescence. Head transverse, as wide as the thorax, the face smooth, polished. Eyes pubescent. Mandibles black. Antennæ 11-jointed, black, the pedicel distinctly longer than the first funicular joint, the first three funicular joints subequal, all longer than thick, the fourth moniliform, the first joint of the club small, transverse, the second, third, and fourth nearly equal, transverse-quadrate, the last short, cone-shaped. Legs black, the trochanters, knees, extreme tips of the tibiæ and the tarsi, honey-yellow. Abdomen very slightly longer than the thorax, polished, the first segment striated, the second about as long as wide. Wings hyaline, fringed, the venation pale brownish-yellow, the marginal vein one-third the length of the stigmal.

HABITAT.—Los Angeles, Cal.

Types in National Museum.

Described from 4 ♀ specimens, reared by Mr. D. W. Coquillett from the eggs of an unknown *Orgyia*.

Telenomus persimilis, sp. nov.

♀. Length, 1.5^{mm}. Black, shining, the thorax distinctly punctulate, subopaque, pubescent; the head $2\frac{1}{2}$ times as wide as long, polished, the vertex toward the eyes alutaceous; legs rufous, the coxæ black. Antennæ 11-jointed, black, the pedicel shorter than the first funicular joint, its apical margin yellow, the second funicular joint is two-thirds the length of the first, the third and fourth shorter than the second, subequal, the fourth being rounded; the club is rather slender, the first joint transverse and shorter than the following, the second, third, and fourth equal, quadrate, the last conic. Wings hyaline, fringed, the venation pale brown, the marginal vein one-third the length of the shaft of the stigmal. Abdomen oval-subtruncate at apex, a little longer than the thorax, smooth, polished, the first segment wider than long, striate, the second not longer than its width at apex, the following short, the third being twice as long as the fourth; the suture between the first and second segments is striated.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen.

Since this was written I have seen specimens of this species reared from unknown hemipterous eggs in Michigan.

Telenomus graptæ How.

Scudd. But. New Eng., p. 1896.

♂ ♀. Length, 0.6^{mm}. Black, shining. Head transverse, wider than the thorax, the face polished, the vertex subopaque. Eyes slightly bristly. Mandibles piceous-black. Antennæ in ♀ 11-jointed, black, very gradually clavate, the club less distinctly defined than usual; the pedicel a little longer and stouter than the first funicular joint, the second and third funicular joints moniliform, the second very slightly longer than the third, the latter a little transverse; first and second joints of club transverse, the third and fourth quadrate, the last conic. Legs piceous-brown, almost black, the trochanters, knees, tips of tibiæ, and tarsi, pale. Abdomen a little shorter than the thorax, truncate posteriorly, the first segment transverse, finely striated, the second wider than long, smooth and polished, the suture between it and the first with some striæ. Wings hyaline, fringed, the venation yellowish, the marginal vein one-third the length of the shaft of the stigma.

In the ♂ the antennæ are 12-jointed, filiform, the scape black, the flagellum brown; the pedicel is shorter than the first funicular joint, the second and third funicular joints about equal, and longer than the first, the joints beyond to the last, round-moniliform, slightly pedicellate, the last conic, twice as long as the penultimate. Legs brown, the anterior tibiæ, trochanters, base and apex of the tibiæ, and the tarsi, honey-yellow.

HABITAT.—District of Columbia.

Types in National Museum.

Redescribed from many specimens reared by Dr. Riley, September 16, 1886, from the eggs of *Grapta interrogationis* Fabr.

Telenomus spilosomatia, sp. nov.

♂ ♀. Length, 0.6^{mm}. Polished black, impunctured, the thorax with a fine microscopic pubescence. Eyes bare. Mandibles black. Antennæ ♀ 11-jointed, the scape black, the flagellum dark brown; the pedicel is longer than the first funicular joint; the second and third funicular joints are equal, moniliform; the first joint of the club is transverse, the second, third, and fourth about equal, quadrate, the last cone-shaped. Legs piceous-brown, the trochanters, knees, apices of tibiæ, and the tarsi, pale brownish-yellow. Abdomen not longer than the thorax, smooth and shining, the first segment transverse, the second wider than long, the terminal segments retracted within the second. Wings hyaline, fringed, the venation pale yellowish, the marginal vein very slightly longer than half the length of the stigmal.

In the ♂ the antennæ are 12-jointed, filiform, pale brown, the pedicel distinctly longer than the first funicular joint, the second and third funicular joints about equal, longer than the first, the joints beyond round,

moniliform, the last cone-shaped, twice as long as the penultimate; legs pale brownish-yellow, the coxæ black.

HABITAT.—District of Columbia.

Types in National Museum.

Described from several specimens reared by Dr. Riley, from the eggs of *Spilosoma virginica* Fabr.

***Telenomus minimus*, sp. nov.**

♀. Length, 0.6^{mm}. Black, shining, pubescent, the dorsum of thorax flattened, the pedicel at apex and the two last funicular joints, trochanters, knees, and tarsi, yellowish, rest of the legs pale brownish. The head is twice as wide as long, or very slightly wider, highly polished, face convex, eyes pubescent. Mandibles and throat brownish-yellow. Antennæ 11-jointed, the pedicel more than twice as long as the first funicular joint, the latter not longer than thick, the three following joints exceedingly short, transverse, the last the smallest, the first joint of club short, crescent-shaped, the second semicircular, the third and fourth quadrate, the last ovate. Wings hyaline, pubescent, the venation pale brown, the marginal vein about half the length of the stigmal. Abdomen scarcely larger than the thorax, polished black, without striæ at base, the second segment not as long as wide, the third about one-third the length of the second, the following very short.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

***Telenomus heliothidis*, sp. nov.**

♀. Length, 0.6^{mm}. Black, smooth, impunctured. Head large, much wider than the thorax. Eyes not pubescent. Antennæ 11-jointed, dark brown, the flagellum twice as long as the scape, the pedicel stout and as long as the first and second funicular joints together, the first funicular joint scarcely longer than thick, the second, third and fourth about equal, not longer than thick, the fifth larger, moniliform, club 4-jointed, the second and third joints quadrate, the last conic. Thorax very faintly pubescent, almost bare. Wings hyaline, with a long fringe. Legs dark brown, the tarsi pale. Abdomen not longer than the thorax, broadly truncate behind, the first segment exceedingly short.

HABITAT.—Shreveport, La.

Type in National Museum.

Described from one ♀ specimen, reared in January, 1891, by Mr. F. W. Mally, from the eggs of *Heliothis armigera*.

***Telenomus orgyiae* Fitch.**

Telenomus orgyiae Fitch, Eighth N. Y. Rep., p. 197.

Telaos orgyiae Ashm., Ent. Am., III, p. 100.

♂ ♀. Length, 0.8^{mm}. Black, shining; the thorax microscopically punctate, with a fine sericeous down; the head a little more than 3 times

as wide as thick antero-posteriorly, the face highly polished, the eyes pubescent; thorax highly convex; legs black or piceous-brown, the trochanters, knees, tips of tibiæ, and tarsi, pale or yellowish; in male always pale.

Antennæ in ♀ 11-jointed, black; pedicel longer than the first funicular joint, pale at tip; second and third funicular joints, moniliform, the second slightly the larger, third very small; in ♂ 12-jointed, filiform, hairy, brown; first three funicular joints almost equal in length, about twice as long as the pedicel, the first the stoutest, the third a little curved; remaining joints, except the last, moniliform, loosely joined, the last conic. Wings hyaline, fringed, the venation pale brown, the marginal vein about one-third as long as the stigmal.

Abdomen oval, about as long as the thorax, black and highly polished, the first and second segments without striæ.

HABITAT.—New York and Ottawa, Canada.

Specimens in Coll. Ashmead.

Described from several specimens, in both sexes, bred by Mr. W. H. Harrington from eggs *Orygia* sp. at Ottawa.

***Telenomus ichthyuræ*, sp. nov.**

♂ ♀. Length, 5.6^{mm}. Black, shining, impunctured, the thorax covered with a fine microscopic pubescence. Head very wide, wider than the widest part of the thorax, the face convex, polished. Mandibles piceous. Antennæ in ♀ 11-jointed, black, the flagellum one and a half times as long as the scape, the pedicel much longer than the first funicular joint, the latter only a little longer than thick, the second and third joints equal, moniliform, the fourth still smaller, the joints 2, 3 and 4 of club, quadrate, the last short, conic. Thorax high, convex. Legs piceous-brown, coxæ black, trochanters, knees, base, and apex of tibiæ and the tarsi honey-yellow. Abdomen not as long as the thorax, broadly truncate posteriorly, polished, the first segment transverse, thrice as wide as long, the second much wider than long and occupying most of the surface, the remaining segments scarcely visible, more or less retracted within the second. Wings hyaline, fringed, the venation pale; the marginal vein is very short, punctiform, the stigmal oblique, nearly four times the length of marginal.

In the ♂ the antennæ are filiform, 12-jointed, pale brown, the pedicel slightly longer than the first funicular joint, the second and third stouter and longer than the first, about equal in length, the joints beyond to the last distinctly transverse, the last conic; the legs, except the black coxæ, are pale brownish-yellow.

HABITAT.—Washington, D. C.

Types in National Museum.

Described from many specimens, in both sexes, reared by Dr. Riley from the eggs of *Ichthyura inclusa* Hübn.

Telenomus infuscatipes Ashm.

Telenomus infuscatipes Ashm., Ent. Am., III, p. 100; ♀ ♂.

♂ ♀. Length, 0.8^{mm}. Polished black; the thorax finely pubescent; the head thrice as wide as long, the face very convex; eyes bare; antennæ brown-black, the scape pale at base; legs brown, the coxæ and middle of femora and tibiæ dusky; mandibles rufous. Antennæ ♀ 11-jointed, the flagellum one and a half times as long as the scape, the pedicel twice as large as the first funicular joint, the second and third funicular joints moniliform, a little transverse, the fourth very small, transverse; the first joint of club very short, crescent-shaped, thrice as wide as the last joint of the funicle; the second, third, and fourth joints very wide, transverse-quadrate, twice as wide as long, the last ovate. Wings hyaline, pubescent, the venation yellowish-brown, the marginal vein about half the length of the stigmal. Abdomen not longer or wider than the thorax, the first segment striate, the second a little wider than long.

In the ♂ the antennæ are 12-jointed, long, filiform, the first funicular joint incrassated.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from one ♂ and two ♀ specimens. The ♂ of this species is now destroyed, but it should be recognized again if rediscovered by the incrassated first joint of the funicle.

Telenomus bifidus Riley.

Rep. U. S. Dept. Agric. 1886, p. 531, ♂ ♀; Cress. Syn. Hym., p. 248.

♂ ♀. Length, 0.6^{mm}. Black, shining, the thorax microscopically punctulate and covered with a fine white pubescence. Head as broad as the widest part of the thorax, highly polished, impunctured. Eyes almost bare. Mandibles brown. Antennæ ♀ 11-jointed, the scape black, the flagellum brown-black, the pedicel brownish-yellow, distinctly longer and stouter than the first funicular joint, the second and third funicular joints equal, moniliform, the first joint of the club small, transverse, the second longer, the third and fourth transverse-quadrate, the last cone-shaped. Legs honey-yellow, the femora slightly obfuscated, the coxæ black. Wings hyaline, fringed, the venation yellowish, the marginal vein nearly half the length of the stigmal. Abdomen slightly shorter than the thorax, polished, the first segment slightly wider than long.

In the ♂ the antennæ are 12-jointed, filiform, and of a uniform pale brownish-yellow, the pedicel scarcely longer than the first funicular joint, the first and second funicular joints nearly equal in length, the third slightly shorter, the joints beyond round, or moniliform, the last conic a little less than twice as long as the penultimate; legs pale yellow.

HABITAT.—District of Columbia.

Types in National Museum.

The species was reared by Dr. Riley, July 27, 1886, from the eggs of *Hyphantria textor* Harris.

***Telenomus maculipennis*, sp. nov.**

♀. Length, 0.6^{mm}. Polished black, impunctured, the first segment and the second, for half its length, striate; tarsi whitish.

Head transverse, very little more than twice as wide as thick antero-posteriorly. Eyes bare. Antennæ 11-jointed, the scape short, less than half the length of the flagellum, the pedicel large and much stouter than the funicular joints, as long as the first and second funicular joints together, pale at apex, first and second funicular joints equal, scarcely longer than thick, the third and fourth still smaller, minute, moniliform; club fusiform, longer than the scape, the first joint transverse, the second a little wider and longer, the third still wider, quadrate, the fourth a little narrower, quadrate, the last conic. Thorax subconvex. Wings hyaline, ciliated, with a dusky band across the middle below the marginal vein; the stigmal vein short, with a spurious vein extending into the middle of the wing from the knob; marginal vein about as long as the stigmal. Abdomen about as long as the head and thorax together, the second segment a little longer than wide, with the basal half very finely, longitudinally striated.

HABITAT.—Jacksonville, Fla.

Type ♀ in Coll. Ashmead.

Described from a single specimen captured while sweeping.

The banded wings and the short stigmal vein, with a branch or uncus, from its tip, readily distinguish the species.

***Telenomus sphingis* Ashm.**

(Plate VII, Fig. 7, ♀.)

Telenomus sphingis Ashm., Bull. No. 14, Div. Ent., U. S. Dept. Agric., p. 18; Ent. Am. III, p. 100; Cress. Syn. Hym., p. 313.

♂ ♀. Length, 0.85 to 1^{mm}. Black, shining, the thorax very faintly microscopically punctate, finely pubescent; antennæ brown to dark brown, the scape rarely entirely black, usually pale beneath or at base and apex; legs pale brown, or brownish-yellow, the coxæ black, the femora and tibiæ more or less embrowned. Head thrice as wide as long; the eyes pubescent, the mandibles piceous or brown. Antennæ ♀ 11-jointed, the pedicel longer and stouter than the first funicular joint, yellow at tip, the latter scarcely longer than thick, second and third joints not longer than thick, the fourth short, transverse, a little wider than the third, the club about as long as the funicle and pedicel united, the first joint transverse not so wide as the second, the second, third, and fourth, quadrate, the last conic. Wings hyaline, ciliated, the venation pale brownish or yellowish, the marginal vein a little longer than half the length of the stigmal. Abdomen black, polished, not longer than the thorax, truncate at apex, the first segment and the suture between the

first and second striate; the second segment is half again as long as wide.

In the ♂ the antennæ and legs are yellow, the coxæ black, or dusky, the pedicel slightly shorter than the first funicular joint, the first three funicular joints equal, one and a half times as long as thick, the following to the last, moniliform, subpedicellate.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from many specimens, reared from the eggs of *Sphinx carolina* Linn.

***Telenomus Rileyi* How.**

Scudder, Butterflies New Eng., p. 1896.

♀. Length, 0.6^{mm}. Black, shining, the thorax with a fine microscopic punctation and down. Head broadly transverse, slightly more than thrice as wide as long. Eyes slightly pubescent. Mandibles brown. Antennæ 11-jointed, dark brown, the scape pale at extreme base; the pedicel is a little longer than the first funicular joint; the second, third, and fourth funicular joints moniliform; the first joint of the club transverse, the second, third, and fourth joints about equal, transverse-quadrate, the last cone-shaped. Legs dark brown or piceous, the trochanters, knees, and tarsi, honey-yellow. Abdomen very slightly longer than the thorax, smooth, polished, the first segment striated, the second a little wider than long. Wings hyaline, fringed, the venation pale, the marginal vein punctiform.

HABITAT.—Fairbury, Ill.

Types in National Museum.

Described from 3 ♀ specimens, reared March 22, 1884, from the eggs of *Apatura clyton* by A. H. Mundt.

***Telenomus gossypicola*, sp. nov.**

♀. Length, 0.6^{mm}. Black, shining, impunctured. Head broadly transverse, not quite thrice as wide as long antero-posteriorly. Eyes bare. Mandibles pale rufous. Antennæ 11-jointed, brown, the scape blackish above; the pedicel is slightly longer than the first funicular joint; the second and third funicular joints equal, moniliform; the fourth smaller, transverse; the first joint of the club is transverse, the second, third, and fourth transverse-quadrate, the fourth slightly the largest, the last cone-shaped. Legs dark brown, the trochanters, knees, tips of tibiæ and the tarsi, yellow. Abdomen slightly shorter than the thorax, smooth, polished, the first segment short, transverse, the second wider than long. Wings hyaline, fringed, the venation pale, the marginal vein about half the length of the stigmal.

HABITAT.—Bougère P. O., Concordia Parish, La.

Types in National Museum.

Described from 6 ♀ specimens, reared August 16, 1880, from lepidopterous eggs found on cotton.

Telenomus geometræ, sp. nov.

♂ ♀. Length, 0.45 mm. Black, shining, impunctured. Head transverse, thrice as wide as long, the face convex, highly polished. Eyes bare. Mandibles piceous-brown. Antennæ 9 11-jointed, dark brown; the pedicel is stout and at least twice as long as the first funicular joint; the first funicular joint only a little longer than thick, the second subequal with it, the third moniliform, the fourth very small, transverse; the first joint of the club is transverse, the second larger, transverse, the third and fourth larger, quadrate, the last conic. Legs brown, the posterior coxæ blackish, the trochanters, knees, tips of tibiæ and tarsi, pale. Abdomen not longer than the thorax, smooth, polished, the second segment a little wider than long, apex truncate. Wings hyaline, fringed, the venation pale yellowish, the marginal vein one-third the length of the stigmal.

In the ♂ the antennæ are 12-jointed, filiform, pale brown, the pedicel about as long as the first funicular joint, the first three funicular joints nearly equal, the first being slightly the shortest, the joints beyond round, moniliform, slightly pedicellate, the terminal joint conic, slightly more than twice as long as the preceding. Legs pale or yellowish, the femora and tibiæ dusky.

HABITAT.—(?) District of Columbia.

Types in National Museum.

Described from many specimens reared from the eggs of an unknown geometrid moth found on wild cherry; no date of rearing is given.

Telenomus arzamæ, sp. nov., Riley.

“♀. Length, 0.8 mm. Black, shining, the head and thorax with a faint microscopic punctuation and finely pubescent. Head transverse, slightly more than thrice as wide as long, polished; eyes slightly pubescent; mandibles brown; antennæ 11-jointed, brown, the flagellum darker above than beneath; the pedicel is scarcely longer than the first funicular joint, the funicular joints subequal, the first joint of club transverse, the second, third, and fourth about equal, transverse-quadrate, the last cone-shaped: legs rufous, or reddish-yellow, the trochanters and tarsi paler; sometimes the femora and tibiæ are more or less obfuscated: wings hyaline, fringed, the venation pale brownish, the marginal vein about half the length of the stigmal. Abdomen as long as the thorax, polished, the first segment striated, the second about as long as its width at apex.

"In the ♂ the antennæ are 12-jointed, filiform, pale brownish yellow, the flagellum dusky brown; the pedicel shorter than the first funicular joint; the second and third equal, a little longer than the first, the joints beyond oval-moniliform, the last conic, much longer than the preceding; legs reddish yellow or brownish yellow, the posterior coxæ dusky.

"Described from many specimens reared June 4 to 23, 1884, from eggs of *Arzama densa* Walk."—[From Riley's MS.]

HABITAT.—District of Columbia.

Types in National Museum.

***Telenomus lavernæ*, sp. nov.**

♀. Length, 0.6^{mm}. Black, shining, the thorax closely, microscopically punctulate. Head thrice as wide as long. Eyes bare. Mandibles piceous. Antennæ 11-jointed, brown, the scape pale rufous, the pedicel slightly longer than the first funicular joint, the funicular joints subequal, the joints of the club only a little wider than long. Wings hyaline, fringed, the venation yellowish; the marginal vein about one-third the length of the stigmal. Legs brownish-yellow. Abdomen as long as the thorax, polished, the first segment striate, the second not longer than wide.

HABITAT.—District of Columbia.

Types in National Museum.

Described from specimens reared by Dr. Riley, June 21, 1884, from from eggs of *Laverna luciferella* Clem.

***Telenomus podial*, sp. nov.**

♂ ♀. Length, 1^{mm}. Black, shining, the thorax very finely but distinctly punctate, and with a white pubescence. Head broadly transverse, the face smooth, the vertex under a strong lens exhibiting a faintly shagreened or alutaceous surface. Eyes a little bristly. Mandibles brownish-yellow. Antennæ ♀ 11-jointed, brown, the scape and pedicel yellow, or brownish-yellow; the pedicel is distinctly longer than the first funicular joint, the second subequal with the first, the third and fourth small, moniliform; the first joint of the club is transverse, about half the length of the second, but not so wide, the second and third transverse-quadrate, the fourth quadrate, the last cone-shaped, not longer than the preceding. Legs, including coxæ, honey-yellow. Abdomen as long as the thorax, polished, the first segment striate, the second as wide as long, striate at basal suture. Wings hyaline, fringed, the venation pale yellow, the marginal vein less than half the length of the stigmal.

In the ♂ the antennæ are 12-jointed, filiform, the first three funicular joints lengthened and thickened, the first and second, about equal, the third a little shorter; the pedicel is only half the length of the first

funicular joint, the joints after the third moniliform, the last conic; legs, including coxæ, honey-yellow.

HABITAT.—St. Louis, Mo.

Types in National Museum.

Described from specimens reared from eggs of *Podisus spinosus* Dall., June 9, 1879.

***Telenomus chrysopæ*, sp. nov.**

♂. Length, 0.6^{mm}. Black, shining, the thorax microscopically punctate, with a fine down. Head transverse, thrice as wide as long. Eyes with a few hairs. Mandibles brown. Antennæ 11-jointed, brown, the pedicel hardly as long as the first funicular joint, the second and third funicular joints about equal, longer than the first, the joints beyond to last oval-moniliform, slightly pedicellate, the last conic, about twice as long as the penultimate. Legs dark fuscous or brown, the coxæ black or blackish, the trochanters, knees and tarsi, pale. Abdomen not as long as the thorax, spatulate, smooth, polished, without striæ, the second segment not longer than its width at apex. Wings hyaline, fringed, the venation pale brown, the marginal vein about half the length of the stigmal.

HABITAT.—District of Columbia.

Types in National Museum.

Described from 4 ♂ specimens, reared from the eggs of *Chrysopa* sp. in July.

***Telenomus oelodasidia*, sp. nov.**

♂. Length, 0.8^{mm}. Black, shining, the thorax very faintly, microscopically punctate, with a fine, white pubescence. Head transverse, a little broader than the thorax, the vertex exhibiting a faint, shagreened punctuation, the face smooth, highly polished. Eyes pubescent. Mandibles pale brown, or yellowish. Antennæ 12-jointed, brown, the flagellum, fully as long as the body, very bristly, the pedicel very small, rounded, not half the length of the first funicular joint, the first three funicular joints stout and long, the first, much shorter than the second, the third, a little shorter than the second, the joints beyond oval-moniliform, the last cone-shaped, twice as long as the penultimate. Legs piceous, the coxæ black, trochanters, knees, anterior tibiæ, and tips of the others and all the tarsi, honey-yellow. Wings hyaline, fringed, the venation pale yellowish, the marginal vein about half the length of the shaft of the stigmal. Abdomen scarcely as long as the thorax, polished, the first segment and the second at base, striate, the latter wider at apex than long.

HABITAT.—Washington, D. C.

Types in National Museum.

Described from 2 specimens reared August 31, 1882, from the eggs of *Caelodasys leptinoides* Grote.

Telenomus clisiocampæ sp. nov., Riley.

“♀. Length, 0.6^{mm}. Black, shining, the thorax alone exhibiting a faint microscopic punctation. Head transverse, about thrice as wide as long: eyes faintly bristly; mandibles brown; antennæ 11-jointed, black, the pedicel much longer than the first funicular joint, the second funicular joint subequal with the first, the third very short, moniliform; the first joint of club transverse, small, the second, third, and fourth equal, quadrate, the last bluntly cone-shaped, scarcely longer than the preceding and narrower: legs dark brown, almost black, the trochanters, a small spot on knees, and the tarsi, pale: wings hyaline, fringed, the venation pale brown, the marginal vein about one-third the length of the stigmal. Abdomen longer than the thorax, pointed at apex, smooth and polished, the second segment longer than wide.

“In the ♂ of what I take to be this species, the antennæ are 12-jointed, filiform, brown, the pedicel not as long as the first funicular joint, the second and third about equal, very slightly longer than the first, the joints beyond ovoid-moniliform. The legs show much more yellow than in the ♀, the knees, broadly, base and apex of tibiæ and tarsi, yellow. The first and second abdominal segments are striated at base; while the second is almost twice as long as wide.

“Described from one ♀ reared by Albert Koebele from the eggs of a *Clisiocampa* sp. in California, and one ♂ reared by C. F. Waters in Nebraska, March 23, 1889, from the eggs of *Clisiocampa americana* Harris.”
[From Riley's MS.]

HABITAT.—Placer County, Cal., and Westerville, Nebr.
Types in National Museum.

† Telenomus pennsylvanicus, sp. nov.

♀. Length, 1.2^{mm}. Brown-black, opaque, coarsely cribrately punctate; the face with a deep impression just above the antennæ and with a carina between the antennæ. Antennæ 12-jointed, brownish-yellow, the club fuscous; the pedicel is longer than the first funicular joint, the second subequal with the first, joints 3 and 4, scarcely longer than thick, the club 5-jointed. Mesopleura cribrate punctate, with a rufous margin. Wings hyaline, pubescent, the marginal vein a little longer than half the length of the stigmal.

Abdomen broadly oval, sessile, the first segment transverse with longitudinal raised lines, the following segments coarsely shagreened.

HABITAT.—Pennsylvania.

Type, ♀, in Berlin Museum.

Described from a single specimen labeled “Penn. Zimmermann.” This species is at once distinguished from all others by the cribrate punctuation, and it may ultimately form the type of a new genus. My recollection of it is that it closely resembled an *Hadronotus*, and it is placed here doubtfully.

Telenomus rufoniger Prov.

Add. et corr., p. 403.

♂. Long. 10 pce. D'un noir brillant en dessus, le scape des antennes, la poitrine, les pattes avec la base de l'abdomen d'un jaune plus ou moins roux. Ailes avec l'humérus se confondant avec la nervure costale, ulna élargie, ayant l'apparence d'un second stigma; cellule radiale ouverte, la partie antérieure de l'aile plus ou moins obscurcie de roussâtre. Abdomen assez court, claviforme, subsessile. Cap Rouge.

Unknown to me. The species is certainly not a true *Telenomus*, and appears to me, judging from his description, a *Ceraphronid*.

TRISSOLCUS Ashmead, gen. nov.(Type *T. brochymenæ*, Ashm.)

Head very large, transverse, much broader than the thorax, the frons convex, the occiput deeply concave, the upper edge of which is sharp. Ocelli 3, triangularly arranged, widely separated, the lateral a little distant from the margin of the eye, and connected with it by an oblique grooved line. Eyes large, subovate.

Antennæ inserted close to the mouth, in ♀ 11-jointed, clavate, the funicle 3-jointed, the club 6-jointed, in ♂ 12-jointed, filiform, with the flagellar joints moniliform or submoniliform, pubescent.

Maxillary palpi 3-jointed.

Mandibles bifid.

Thorax short, ovoid, convex, the collar not visible from above, the mesonotum with 3 furrows abbreviated anteriorly, the scutellum semi-circular, the metathorax very short.

Front wings pubescent, the marginal vein usually short, the stigmal vein rather long, oblique; postmarginal long.

Abdomen broadly oval, depressed, subsessile, the second segment the longest, but always broader than long.

Legs as in *Telenomus*.

This genus is closely allied to *Telenomus*, but is readily distinguished by the three abbreviated mesonotal grooves, broader head, and the wide second abdominal segment.

It seems to be parasitic only on the eggs of plant bugs belonging to the family *Pentatomidæ*.

Our species may be thus tabulated:

TABLE OF SPECIES.

Coxæ and femora black.

Trochanters, tips of femora, tibiæ, and tarsi honey-yellow.

Antennæ wholly black, rarely with the distal ends of scape pale.

First funicular joint as long as, or a little longer than, the pedicel.

Second abdominal segment above longitudinally aciculated; scutellum finely punctate *T. RUSCHISTI* Ashm.

Second abdominal segment above smooth, not aciculated; scutellum smooth, polished *T. POPISI*, sp. nov.

First funicular joint shorter than the pedicel.

Thorax finely and closely punctate.

Second abdominal segment longitudinally aciculated.

Scutellum smooth, polished. T. THYANTÆ, sp. nov.

Thorax rugose.

Second abdominal segment perfectly smooth.

Scutellum punctate or rugose. T. MURGANTLÆ, sp. nov.

Legs and scape yellow, or pale ferruginous; coxæ black.

Pedicel longer than the first funicular joint.

Scutellum rugoso-punctate, subopaque. T. RUFISCAPUS, sp. nov.

Scutellum smooth, polished. T. BROCHYMENÆ Ashm.

***Trissolous euschisti* Ashm.**

Telenomus euschistus Ashm., Bull. No. 3, Kans. Ex. Sta., App., p. 11 (1888).

♀. Length, 1.5^{mm}. Black, shining, very finely closely punctate, the thorax with a white pubescence. Head very large and broad, the face with a median furrow. Mandibles piceous-black. Palpi pale. Antennæ 11-jointed, dark brown, the scape at base and tip, the pedicel and one or two funicular joints more or less pale brown or yellowish; the pedicel is as thick and as long as the first funicular joint, the latter thrice as long as thick, the two following joints small, the club slender, fusiform, 6-jointed. Mesonotum with 3 abbreviated furrows posteriorly; scutellum smooth, shining, impunctured. Wings hyaline, the venation pale brown or yellowish, the marginal vein about one-third the length of the stigmal. Legs black; the trochanters, tips of femora, tibiæ, and tarsi, honey-yellow or brownish-yellow, the tibiæ sometimes dusky or fuscous at the middle. Abdomen broadly oval, polished, as long as the thorax, the first segment striate.

HABITAT.—Manhattan, Kans.

Types in Kansas State Agricultural College and Coll. Ashmead.

Described from many specimens reared by Prof. E. A. Popenoe, from the eggs of *Euschistus servus* Say.

***Trissolous podisi*, sp. nov.**

♀. Length, 1 to 1.2^{mm}. Black, subopaque, the thorax microscopically punctate; head broad, smooth, and polished, with a few punctures surrounding the orbits; mandibles black. Antennæ 11-jointed, black, the pedicel not longer than the first funicular joint, the second and third funicular joints transverse-quadrate; the club large, pointed at tip, the joints transverse. Thorax with 3 abbreviated furrows posteriorly; scutellum smooth, polished, impunctured. Wings hyaline, finely pubescent; the venation fuscous, the marginal vein about half the length of the shaft of the stigmal. Legs black, trochanters, knees, tips of tibiæ and tarsi, pale or yellowish. Abdomen broadly oval, about as large as the thorax, polished, the first segment striate, the second about thrice as wide as long, with only faint traces of aciculations at base.

HABITAT.—Philadelphia, Pa.

Types in National Museum.

Described from four specimens received from Mr. E. T. Cresson, reared from the eggs of *Podisus spinosus* Dallas.

Trissolcus thyantæ, sp. nov.

♀. Length, 0.8 to 1^{mm}. Black, subopaque, closely, finely, minutely punctulate; mandibles piceous; legs black, tips of all the femora and the tibiæ and tarsi, honey-yellow. Antennæ 11-jointed, black, the pedicel shorter than the first funicular joint, the second quadrate, the third very small, transverse.

Thorax with 3 abbreviated impressed lines posteriorly; scutellum smooth, polished. Wings hyaline, pubescent, the venation pale brownish-yellow, the marginal vein about one-third the length of the shaft of the stigmal. Abdomen broadly oval, truncate at tip, the first segment, and the second at base, coarsely striate.

HABITAT.—Selma, Ala.

Types in National Museum.

Described from specimens reared by Mr. E. A. Schwarz from the eggs of *Thyanta custator*, but which were wrongly determined as those of *Podisus spinosus*. The species comes near *T. podisi*, but differs in size, color of the legs, punctuation, and in venation.

Trissolcus murgantiæ, sp. nov.

♂ ♀. Length, 1 to 1.4^{mm}. Black, rugose, the abdomen smooth, polished; first abdominal segment striate; trochanters, knees, distal ends of tibiæ, and tarsi, dark honey-yellow; wings hyaline, the venation pale brownish, the marginal vein about as long as the stigmal. The female is the larger, with the face rugose or closely punctate; antennæ 11-jointed, wholly black or brown-black, the pedicel a little longer than the first flagellar joint; funicular joints 2, 3, and 4 transverse, the third the largest; club 5-jointed, slightly wider than the last funicular joint, the last joint minute; mandibles black.

The male averages only 1^{mm} in length, with the face almost smooth or only faintly punctate; antennæ 12-jointed, filiform-moniliform, the scape brownish-yellow, flagellum brown-black, with all the joints, except the first and last, moniliform; the last fusiform, twice as long as the penultimate; mandibles rufo-piceous.

HABITAT.—Baton Rouge, La.

Types in National Museum.

Described from several specimens reared by Mr. H. A. Morgan, from eggs of the cabbage bug, *Murgantia histrionica* Hahn. Comes nearest to *T. thyantæ* and *T. rufiscapus*, but is distinguished from them by sculpture, color, and differences in the antennæ.

Trissolcus rufiscapus, sp. nov.

♀. Length, 1.4^{mm}. Black, subopaque, very finely punctate; front shining, finely, feebly punctate: a large fovea above the clypeus; legs

rufous; the coxæ black. Antennæ 11-jointed, black, the scape rufous, slightly dusky at tip above, the pedicel nearly as long as the first and second funicular joints together, the second and third funicular joints transverse; the club 5-jointed, not quite as long as the scape. Thorax minutely, closely punctulate, slightly pubescent, with three abbreviated furrows posteriorly; the scutellum rugoso-punctate, slightly lustrous, pubescent. Wings subhyaline, pubescent, the nervures pale brownish, the marginal vein very short. Abdomen broadly oval, depressed, polished, the first segment striate, the second, twice as wide as long.

HABITAT.—Washington, D. C.

Type in National Museum.

***Trissolcus brochymenæ* Ashm.**

(Pl. VII, Fig. 6, ♀.)

Telenomus brochymenæ Ashm., Fla. Agric., IV, 1881, p. 193; Ent. Am., III, p. 118; Cress. Syn. Hym., p. 314.

♀. Length, 0.8 to 0.9^{mm}. Black, shining, the thorax feebly, microscopically punctulate, with a fine pubescence; head smooth, fully four times as wide as thick antero-posteriorly, a fine punctulate line surrounding the orbits. Ocelli very widely separated, the lateral close to the eye margin on an oblique grooved line extending from the eye to the occiput. The occiput concave, the upper edge sharp; cheek flat. Eyes pubescent. Antennæ 11-jointed, the scape, pedicel, and first funicular joint, brownish-yellow, the following joints brown-black; the scape does not extend above the front ocellus; the pedicel is longer and thicker than the first funicular joint, the latter about twice as long as thick, joints 2 and 3 transverse, the club large, 6-jointed, all the joints, except the last, transverse. Thorax rounded, the mesonotum convex, wider than long, with 3 abbreviated grooved lines posteriorly. Legs honey-yellow, the coxæ black. Abdomen small, flattened, not longer than the thorax, truncate behind, black, shining, the first segment transverse, striated, separated from the second by a deep suture, the second occupying most of the remaining surface. Wings hyaline, the venation yellow, the marginal vein punctiform, not longer than thick.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from several specimens reared from the eggs of *Brochymena arborea* Say. Specimens are also in the National Museum, reared from the eggs of an unknown Hemipteron by Mr. H. G. Hubbard.

DISSOLCUS Ashmead, gen. nov.

(Type *D. nigricornis* Ashm.)

Head transverse or subquadrate, not wider than the thorax, the occiput flat but not concave or emarginate. Ocelli 3, in a triangle, the lateral a little away from the margin of the eye. Eyes ovate, pubescent.

Antennæ inserted close to the clypeus, in ♀ 11-jointed, the flagellum very gradually increasing in thickness toward the tip, or subclavate; the pedicel is larger than the first funicular joint, which is a little longer than thick, the second shorter, the third and following joints, transverse, or wider than long. ♂ unknown.

Thorax ovoid, the mesonotum scarcely longer than wide, subdepressed, with 2 short impressed lines posteriorly, abbreviated anteriorly, the scutellum flattened, the metathorax short, rounded behind.

Front wings as in *Telenomus* except the marginal nervure is as long as the stigmal.

Abdomen subsessile, depressed, ovate, about as long as the head and thorax together, subacute at tip, the second segment nearly twice as long as wide.

Legs as in *Telenomus* except the tarsi are distinctly longer than the tibiæ.

In the shape of the abdomen and in antennal and thoracic characters this genus approaches nearest to *Phanurus*, but otherwise it is like *Telenomus*.

The broader wings and the longer marginal nervure will distinguish it from the former, while its cephalic, antennal, and thoracic characters readily separate it from the latter, the two abbreviated mesonotal furrows being found in no other genus. It bears not the slightest resemblance to *Trissolcus*, which has a very large, broad head, convex thorax, a broadly oval abdomen, and three abbreviated mesonotal furrows.

Only a single species is known.

***Dissolcus nigricornis*, sp. nov.**

(Pl. VII, Fig. 8, ♀.)

♀. Length, 0.8mm. Black, subopaque, the surface finely alutaceous, subpubescent; head hardly twice as wide as thick antero-posteriorly, the face convex, smooth, shining. Eyes pubescent. Antennæ 11-jointed, very gradually subclavate, the club not distinctly separable; the flagellum is twice the length of the scape; the pedicel stouter than the first three or four funicular joints, twice as long as thick; the first funicular joint longer than thick, the second, not longer than thick, the following transverse and very gradually widening to the tip, the last conic or ovate. Thorax ovoid, the mesonotum scarcely longer than wide, a little depressed, with 2 delicate abbreviated impressed lines posteriorly. Wings hyaline, iridescent, the nervures pale brown, the marginal as long as the oblique stigmal. Legs black, the knees and tarsi, brown. Abdomen black, polished, as long as the thorax, the first segment striate, the second longer than wide.

HABITAT—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen taken while sweeping.

ARADOPHAGUS Ashm., gen. nov.

Head oblong, very flat, attached to the thorax high up on the occiput, the space between the eyes very wide. Ocelli 3, subtriangularly arranged, the lateral far from the eye. Eyes oblong-oval, bare.

Antennæ inserted at the mouth, subclavate, 12-jointed in both sexes; the scape very long, cylindrical; the pedicel long, one-third longer than the first flagellar joint, the following joints shorter but stouter, subequal.

Maxillary and labial palpi very short, inconspicuous, 2-jointed.

Mandibles small, bifid.

Thorax ovoid, very flat, the prothorax not at all developed or visible from above; mesonotum smooth, without furrows, rounded before; scutellum short, semicircular, with a very delicate cross-line before the tip; metathorax short, with delicate lateral keels.

Front wings fringed as in *Cerocephala*, the submarginal vein reaching the costa before attaining half the length of the wing, the marginal vein longer than the oblique stigmal vein, while the post-marginal vein is well developed.

Abdomen very flat, ovate, with a short petiole, the second segment the largest, about twice the length of the first, the third and fourth about equal, two-thirds the length of the second; ovipositor exerted. Legs slender.

This genus in its thoracic and antennal characters is quite distinct from all others in the group, and requires no special comment. It shows, strongly, affinities with the *Ceraphroninae* and was originally placed there in my collection; it also resembles a "Spalangiid," and caused me, at one time, to contemplate removing the *Spalanginae* from the *Chalcididae* to the *Proctotrypidae*.

***Aradophagus fasciatus*, sp. nov.**

(Pl. VII, Fig. 9, ♀.)

♂ ♀. Length, 1.5^{mm}. Honey-yellow, smooth, polished, impunctured. Scape, pedicel, and basal half of first funicular joint pale or whitish, the rest of the antennæ, brown-black. Front wings fuscous, the base, a transverse band at the middle, and the apical margin white; hind wings hyaline. Abdominal sutures narrowly banded with fuscous.

HABITAT.—Jacksonville, Fla.

Types in National Museum and coll. Ashmead.

The two specimens in my collection were taken by myself in April, 1887, under live oak bark badly infested with *Brachyrhynchus granulatus* Say and *Pityophthorus querciperda* Swz., the old egg masses of the *Ara*-did being quite plentiful. The single specimen in the National Museum was taken by Mr. E. A. Schwarz in Florida, who thinks he reared it from *Pityophthorus consimilis* Lec., together with several *Cerocephalæ*. I believe its habits will prove identical with other *Scelionids*, and it will be found to be a parasite in the eggs of the *Aradidae*.

Tribe II.—BÆINI.

This tribe is of small extent, apparently, and for the most part, comprises species of the smallest size, the majority of which rarely attain one millimeter in length.

The habitus of the species more closely resembles the Telenomini, but the solid antennal club of the female, the difference in venation of the winged forms, the marginal vein being punctiform, or short and stout, the stigmal vein short, thickened at base and terminating in a small rounded stigma, while the basal nervure is usually present, and the third abdominal segment, not the second, being the largest, readily distinguish them. These differences and the position of the lateral ocelli will also separate them at once from the other tribes.

The tribe *Bæini*, as at present defined, will contain five genera: *Thoron* Hal., *Acolus* Först., *Acoloides* How., *Ceratobæus* Ashm., and *Bæus* Hal., the parasitism of three of which is known.

Species in the genera *Acolus*, *Acoloides*, and *Bæus* have been reared in America from spider eggs; and I should not be in the least surprised to learn, from future observations, that the whole group confine their attacks to Arachnid eggs.

The genera may be distinguished by the aid of the following table:

TABLE OF GENERA.

FEMALES.

Apterous forms..... 2

Winged.

First abdominal segment without a horn at base.

Mesonotum with 2 furrows; first abdominal segment petioliform; eyes bare; lateral ocelli distant from the margin of the eye..... *THORON* Hal.

First abdominal segment with a horn at base.

Mesonotum without furrows..... *CERATOBÆUS* Ashm., gen. nov.

2. Scutellum distinct.

Mesonotum without furrows; lateral ocelli close to the eye.

First abdominal segment with a horn at base *CERATOBÆUS*.

First abdominal segment without a horn at base.

First abdominal segment as broad as the metathorax and only visible as a transverse line; face with an antennal impression, the occiput concave, the superior margin sharp..... *ACOLUS* Först.

First abdominal segment subpetiolate, much narrower than the metathorax; face not or but slightly impressed, the superior margin of the occiput rounded *ACOLOIDES* How.

Scutellum wanting *BÆUS* Hal.

MALES.

Winged.

Mesonotum with two furrows; lateral ocelli distant from the margin of the eye.

Antennæ filiform, the flagellar joints about three times as long as thick.

THORON Haliday.

Mesonotum without furrows; lateral ocelli close to the margin of the eye.

Antennæ filiform, moniliform, or submoniliform.

Basal nervure distinct; mandibles bifid.

Head much broader than the thorax; eyes bare; antennæ tapering toward apex; basal abdominal segment as wide as the metathorax.

ACOLUS Förster.

Head subquadrate, but slightly broader than the thorax; antennæ slightly thickened toward apex; basal abdominal segment petioliform, much narrower than the metathorax. BÆUS Haliday.

Basal nervure wanting; mandibles tridentate.

Head transverse, scarcely broader than the thorax; eyes hairy; antennæ slightly thickened at tip; basal abdominal segment transverse, not quite as wide as the apex of metathorax. ACOLOIDES Howard.

THORON Haliday.

Ent. Mag., I, p. 271 (1833); Först. Hym. Stud., II, p. 100 (1856).

(Type *T. fornicatus* Nees. = *T. metallicus* Hal.)

Head rather large, transverse, the occiput and cheeks margined; ocelli 3, triangularly arranged, and wider apart than in *Prosacantha*; eyes large, oval.

Antennæ inserted close to the clypeus, 12-jointed in both sexes; in ♀ clavate, the club solid, although showing traces of sutures; in ♂ long, filiform, the pedicel small, oval, the flagellar joints nearly equal, about 4 times as long as thick, pubescent.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles tridentate.

Thorax ovoid, the prothorax visible from above as an arcuate line, depressed anteriorly; mesonotum with 2 impressed lines; metathorax very short, rounded at the sides.

Front wings with the submarginal vein joining the costa behind the middle; the marginal vein very short, thickened; postmarginal vein not, or scarcely, developed; the stigmal vein longer than marginal, thickened at base, and terminating in a little knob.

Abdomen oval or oblong-oval, strongly narrowed at base, the first segment longer than wide, the third the longest.

Legs long, slender, pilose, the femora clavate, the tibiæ subclavate, with spurs 1, 1, 1; the tarsi very long and slender.

Thoron pallipes Ashm.

(Pl. XVI, Fig. 3, ♀.)

Ent. Am., III, p. 99.

♀. Length, 2^{mm}. Black, polished; head subquadrate, smooth, the face convex; mandibles bluntly 3-dentate at tips, pale rufous. Mesonotum sparsely punctate, with 2 furrows posteriorly; metathorax and pleura rugose. Antennæ 12-jointed, dark brown, the scape and pedicel brownish-yellow. Legs, including coxæ, pale or yellowish. Abdomen oblong-oval, a little longer than the head and thorax together, arched high up on the metathorax, the first segment petioliform,

scarcely as long as the second, a little humped basally; first and second segments striated; rest of the abdomen smooth, polished, sparsely hairy toward the apex. Wings hyaline, the venation brown, the marginal vein very short, thick, the stigmal vein short, stout at base.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

This is the only true *Thoron* in our fauna, the species described as such, *Thoron opacus* How., Ins. Life, Vol. II, p. 268, supposed to have been reared from the Fluted Scale, *Icerya purchasi*, being a ♂ Telenomid and belonging to the genus *Phanurus*.

ACOLOIDES Howard.

Ins. Life, II, p. 269 (1890).

(Type *A. saitidis* How.)

Head transverse, wide, the frons convex; ocelli 3, triangularly arranged, but widely separated, the lateral being close to the margin of the eye; eyes large, oval, hairy.

Antennæ inserted just above the clypeus; in ♀ apparently but 7-jointed, the club being large and inarticulate, the pedicel lengthened, the last three funicular joints, small, transverse; in ♂ 12-jointed, filiform, submoniliform.

Maxillary palpi 4-jointed; labial palpi 2-jointed.

Mandibles 3-dentate.

Thorax oval, the prothorax not visible from above; mesonotum without furrows; metathorax with the posterior angles subacute.

Front wings with the marginal vein punctiform, the postmarginal not, or scarcely, developed, the stigmal vein long, oblique, thickened at base.

Abdomen short, oval, the first and second segments short, usually striated, the first much narrower than the metathorax or subpetiolate, the third very large, occupying half, or a little more than half, the whole surface.

Legs moderate, the tibial spurs very weak, scarcely developed, the tarsi 5-jointed, slender, the basal joint of posterior tarsi twice the length of the second.

This genus may be identical with *Acolus* Förster, as species occur in it with and without wings, the apterous species fitting exactly into the brief diagnosis of the genus by Förster; but as Förster's type *Acolus piceiventris*, so far as I know, was never described, and as I have discovered another wingless form closely allied to *Acoloides*, which is evidently quite distinct, that will also fit into Förster's brief description, I have here, in my perplexity, made the latter the type of Förster's genus, so as to enable me to retain the well-characterized Howardian genus. Kirchner's description of *Acolus luteus*, which might assist me, I have not been able to see.

The difference between the two genera, as here understood, is sufficiently brought out in my table, and I must leave to others the thankless task, by the inspection of the type, if it is still in existence, of the proper identification of Förster's genus.

Mr. Howard's genus is parasitic on spiders. The species may be synoptically represented as follows:

TABLE OF SPECIES.

Wingless or subapterous species	3
Winged.	
Species not entirely black.	2
Species, except sometimes the base of the abdomen, entirely black.	
Opaque, closely, minutely punctate.	
Thorax and scutellum flat.	
Antennæ and legs, except coxæ, yellow	A. SAITIDIS How.
Lustrous, but still microscopically punctulate.	
Thorax and scutellum more convex.	
First and second abdominal segments striate.	
Petiole pale rufous or yellowish	A. HOWARDII, sp. nov.
Petiole and base of abdomen yellowish	A. EMERTONII How.
2. Head and thorax black, microscopically punctate.	
Abdomen at base and disks of two or three of the following segments, yellow.	
A. EMERTONII How.	
Abdomen yellow, the third segment across the base and the two apical segments fuscous	A. BICOLOR, sp. nov.
Wholly honey-yellow, eyes and ocelli, black or brown	A. MELLEUS, sp. nov.
3. Head and thorax black, subopaque.	
With wing scales; abdomen black, sericeous, the petiole yellow.	
A. SUBAPTERUS, sp. nov.	
Without wing scales; abdomen brownish-yellow	A. SEMINIGER, sp. nov.

Acoloides saitidis How.

Ins. Life, II, p. 270, fig. 58; loc. cit., p. 359.

"♀. Length, 1.4^{mm}; expanse, 3.6^{mm}; greatest width of fore wing, 0.46^{mm}. Antennæ short; pedicel long, nearly one-half the length of scape; joint 1 of funicle one-half as long as pedicel; joints 2, 3, and 4 very short; club very large, oval, and one-third longer than four preceding joints together; no articulations can be distinguished, but it is homologically composed of six joints. Eyes hairy; lateral ocelli touching the eye margin. Head, face, and mesonotum densely and finely punctate; parapsidal furrows not present; first and second abdominal segments with fine, close, longitudinal striae, wanting at smooth posterior border; the very large third segment and short fourth, densely and finely punctate, and clothed irregularly with short, whitish pile, which is also present, although sparser, upon the mesonotum, and is quite thick on the vertex; mesopleura finely punctate below; metapleura smooth. The marginal vein is very short, and not quite coincident with costa; the post marginal is extremely short; the stigmal is long and slender, and terminated by a small rounded knob. General color

deep black; all legs and antennæ honey-yellow; all coxæ black, litter at tips; scape brownish and pedicel darker than club.

"♂. Differs from female only in antennæ, which are plainly 12-jointed; joint 1 of funicle as long as pedicel, joints 2 to 7 subequal in length and width, and each as broad as long, and well separated; club oval, nearly as long as three preceding joints together. Antennæ uniformly honey-yellow." (*Howard.*)

HABITAT.—Lincoln, Nebr., and Oxford, Ind.

Types, 9 ♂ and 1 ♀ in National Museum.

The types of this species, as recorded by Mr. Howard, were reared by Mr. L. Bruner, at Lincoln, Nebr., from the eggs of the Araneid *Saitis pulex*. "The eggs of this spider are a little more than a millimeter in circumference, and each egg harbors but one parasite, which issues by splitting the eggs open rather than by gnawing a regular hole." The same species was also bred by Mr. F. M. Webster, at Oxford, Ind., from a spider egg-sac found under the bark of a log, in October, 1884.

***Acoloides Howardii*, sp. nov.**

♀. Length, 1^{mm}. Black, shining, with a microscopic white pile, and feebly microscopically punctate; petiole and legs, brownish-yellow, the coxæ black. Antennæ 7-jointed, brown, the pedicel large, the first funicular joint very little longer than thick, scarcely one-third the length of the pedicel, the three following joints transverse, the last the widest, club large, not jointed. Scutellum semicircular, subconvex. Mesopleura with a long, femoral furrow, crenate at bottom. Metapleura divided into two parts by the spiracular furrow, the upper portion smooth, impunctate, the lower portion punctate. Wings subhyaline, the nervures brown, the stigmal vein long, thickened at base. Abdomen broadly oval, shining, but microscopically punctate, and finely pubescent, the first segment twice wider than long, striated and yellow; the second and following segments black, the second with striæ at base.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead.

Described from two specimens.

This species is closely allied to *A. saitidis* How., but it is slightly smaller, and not so densely punctate, the scutellum shorter, subconvex, the petiole yellow, while the first flagellar joint is scarcely one-third the length of the pedicel.

***Acoloides Emertonii* How.**

Ins. Life, IV, p. 202.

♀. Length, 1.4^{mm}; expanse, 1.5^{mm}. Black, shining, but closely microscopically punctulate; antennæ brown-black, the scape pale at extreme base; legs, including coxæ, brownish-yellow; abdomen mostly yellow, the second segment, lateral and

apical margins of third, and the following segments, fuscous or black. Head very wide, more than three times as wide as thick antero-posteriorly; eyes large, rounded, whitish (after death) and pubescent; mandibles pale rufous, the tips black. Antennal club large, fusiform, as long as the pedicel and funicle united; first funicle joint less than half the length of the pedicel, the other joints transverse. Thorax convex, with two punctate lines in front of the scutellum, the latter semicircular, convex; metanotum very short, striated, bounded by a carina posteriorly, the angles produced into a minute tooth. Wings subhyaline, pubescent, extending beyond tip of abdomen, the venation dark brown, the marginal vein short, stout, very little longer than thick, the stigmal long, slender, ending in a small knob. Abdomen oblong-oval, one-third longer than the head and thorax together, microscopically sculptured, but lustrous, the first and second segments about equal in length, striated. (*Howard*.)

HABITAT.—Massachusetts.

Type in National Museum.

Described from seven ♀ specimens, reared by Mr. J. H. Emerton, from a spider's cocoon.

Acoloides bicolor, sp. nov.

♀. Length, 0.8^{mm}. Black, shining, sparsely, faintly microscopically punctate and pubescent; the abdomen, antennæ, and legs, yellow, the third abdominal segment across the base, two apical segments and the femora slightly fuscous or brownish; eyes large, rounded, whitish. Antennæ 7-jointed, very short; the club large, conic-ovate, as long as the pedicel and funicle together; the first funicular joint not longer than thick, about one-fourth the length of the pedicel, the three following joints minute, transverse. Wings hyaline, with a faint yellowish tinge, the nervures dark brown, the stigmal vein thickened at base. Abdomen rotund, the petiole short, striated, rest of the segments smooth, shining.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from two specimens received from Mr. W. Hague Harrington. This species is much smaller than the others, the surface smoother, less distinctly punctate, and the abdomen more rotund; while the color of the eyes and abdomen, and the shortness and relative length of the joints of the antennæ, render it easy of recognition.

Acoloides melleus, sp. nov.

♀. Length, 1.4^{mm}. Uniformly honey-yellow, the eyes and ocelli brown, the wings subfuliginous. The head is very large and wide, the lower part of face being longitudinally striated. Antennæ short, 7-jointed, the club large fusiform, inarticulated; the first funicular joint is twice as long as thick and fully half as long as the pedicel; the second and third are as long as wide; the fourth, transverse.

Abdomen oval, the first segment and the second, at the suture, striated, the following segments feebly, microscopically punctate.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen.

In color, size, width of head, non-pubescent eyes, and the relative length of the antennal joints, this species is very distinct from any other species in our fauna.

Acoloides subapterus, sp. nov.

♀. Length, 0.8^{mm}. Head and thorax black, minutely punctulate; abdomen fuscous or dark brown, the petiole yellow; antennæ and legs brownish-yellow, the club fuscous.

Antennæ 7-jointed; the club large, inarticulate, as long as the pedicel and funicle united; pedicel stout, $2\frac{1}{2}$ times as long as thick, fuscous above; first funicular joint very little longer than thick; second and following joints scarcely as long as thick. Thorax with slight indication of parapsidal furrows posteriorly in the form of two very short grooved lines. Wings present in the form of wing pads which do not extend beyond the tip of the short metathorax.

Abdomen oblong-oval, much longer than the head and thorax together, shining, sericeous; the petiole yellow and separated from the second segment by a constriction; the petiole and second segment are of an equal length, but the latter is fully twice as wide as the former; third segment nearly thrice as long as the second.

HABITAT.—Ottawa, Canada.

Type ♀ in Coll. Ashmead.

Described from a single specimen received from Mr. W. H. Harrington.

Acoloides seminiger, sp. nov.

♀. Length, 0.8^{mm}. Head and thorax black, closely finely punctate, with a sparse, sericeous pubescence; abdomen and legs, brownish yellow, pubescent.

Antennæ 7-jointed, yellowish, the club very large, inarticulate, fuscous, pedicel stout, very little more than twice as long as thick; first funicular joint scarcely longer than thick; second and third, not longer than thick; fourth, transverse. Thorax with slight indications of grooves posteriorly. Metathorax with subacute angles. Abdomen oblong-oval, a little longer than the head and thorax together, the second segment slightly longer than the petiole, the suture between, striate, the third segment $2\frac{1}{2}$ times as long as the second.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from two specimens received from W. Hague Harrington. This species comes very close to *A. subapterus*, but the abdomen is yellow, the relative length of the segments is different, and there are no wing pads,

ACOLUS Förster.

Hym. Stud., II, pp. 100 and 102 (1856).

(Type *A. piceiventris* Först. MS.)

Head large, transverse, the frons very convex, the face with an impression just above the antennae, the occiput concave, emarginated, and faintly margined; ocelli 3, very minute, the lateral close to the margin of the eye, but scarcely discernible; eyes large, oval, bare, or hairy.

Antennae inserted just above the clypeus, in ♀ 7-jointed, clavate, the club large, inarticulated, the pedicel stout, the first funicular joint a little longer than thick, the three following joints small; in ♂ 12-jointed, filiform, pilose.

Maxillary palpi 3-jointed; labial palpi (!) 2-jointed.

Mandibles bifid.

Thorax subovoid, not wider than long, and narrower than the head; pronotum not visible from above; mesonotum transverse without furrows; scutellum semicircular; metathorax extremely short, abrupt.

Wings in ♀ wanting; in ♂ present, the front wings with a basal nervure, a short marginal and short stigmal nervure; the latter clavate.

Abdomen broadly oval, sessile, the first segment the width of the metathorax and only visible as a transverse line, the second about one-third the length of the third, which is the largest, the following segments short.

Legs as in *Baus*, the basal joint of hind tarsi one-third longer than the second, the tibial spurs weak.

Differs from *Acoloides* Howard, in the concave emarginated occiput, in the deep facial impression, bare eyes, 3 jointed maxillary palpi, and in the broadly oval sessile abdomen, the base being as wide as the metathorax, the first segment visible only as a transverse line.

***Acolus xanthogaster*, sp. nov.**

♀. Length, 0.75^{mm}. Head and thorax black, shining, faintly microscopically punctate; antennae, abdomen, and legs, yellow. Head a little more than twice as wide as thick antero-posteriorly, the frons convex, the face with an antennal impression, the eyes large, rounded, bare. Antennae with an unjointed club; the pedicel longer than the first funicular joint; first and second funicular joints about equal, longer than thick; third and fourth, minute. Abdomen oval, sessile, the first segment only visible as a transverse line, the second about two-thirds the length of the third.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen collected by Mr. E. A. Schwarz, June 29, 1891.

Acolus Zabriskiei, sp. nov.

(Pl. xv, Fig. 7, ♂.)

♂. Length, 1^{mm}. Black, polished, finely sericeous; mandibles reddish; scape honey-yellow; flagellum pale brown; legs, including coxæ, reddish-yellow. Head very large and broad, a little more than three times as wide as thick antero-posteriorly, and much wider than the thorax, the space between the eyes alone fully as wide as the thorax; occiput concave, with the superior margin sharp; eyes broadly oval, convex, bare; ocelli triangularly arranged, the laterals situated in the posterior angle of the vertex, close to the eye. Antennæ 12-jointed, filiform; the scape clavate, about one-third as long as the flagellum; pedicel cyathiform, longer than any of the funicular joints; funicular joints all short, scarcely, if at all, longer than thick, pubescent. Thorax short, ovate, rounded before, narrowed and truncate behind, the collar not visible from above; mesonotum a little broader than long, without furrows; scutellum convexly elevated posteriorly, margined, or with a delicate rim, laterally; metathorax short, with short striæ above. Wings hyaline, with long cilia, a basal nervure, a short marginal and a short stigmal vein ending in a small rounded stigma, the stigmal vein thickened at base.

Abdomen oval, narrowed and truncate at base, rounded and broadened posteriorly, the first two segments transversely linear, the third very large, occupying most of its surface, the fourth about as long as the first two united, the following exceedingly short, scarcely visible, except as transverse lines.

HABITAT.—Flatbush, Long Island.

Types, two ♂ specimens, in National Museum.

Bred October 4, 1892, by Rev. J. L. Zabriskie, from the nest of an unknown spider.

CERATOBÆUS Ashm., gen. nov.(Type *C. cornutus* Ashm.)

Head very large and broad, much broader than the thorax, the occiput margined; ocelli 3 in a triangle, wide apart, the lateral touching the eye; eyes broadly oval.

Antennæ inserted at the base of the clypeus, in ♀ short, clavate, 7-jointed, the club very large, inarticulate; ♂ unknown.

Maxillary palpi (?) 3-jointed; labial palpi 2-jointed.

Mandibles bifid.

Thorax oval, the prothorax not visible from above; mesonotum without furrows, or with but a slight trace of them posteriorly; scutellum semicircular; metathorax very short, abrupt.

Front wings, when present, with a distinct but short marginal vein, an oblique stigmal, and no post marginal, the stigmal vein terminating in a slight knob.

Abdomen oval, or pointed-ovate, depressed, subsessile, composed of

6 or 7 visible tergites, the third the largest, the first, furnished with a horn at base extending over the metathorax.

Legs as in *Acolus*.

Male unknown. Allied to *Bacus*, *Acolus*, and *Acoloides*, but readily separated by the projecting horn at the base of the abdomen, as in *Baryconus*, *Caloteleia*, etc.

The two species known to me may be thus tabulated:

TABLE OF SPECIES.

Wingless	2
Winged.	
Black, finely, closely punctulate; legs and antennae, yellow.	
Abdomen pointed ovate, longer than the head and the thorax together	<i>C. CORNUTUS</i> , sp. nov.
2. Head and thorax black, finely, closely punctulate.	
Abdomen, legs, and antennae bright yellow, the former with two fuscous spots toward base	<i>C. BINOTATUS</i> , sp. nov.

Ceratobaeus cornutus sp. nov.

(Pl. VIII, Fig. 8, ♀.)

♀. Length, 1.5^{mm}. Black, finely, closely punctulate; the head with some faint, thimble-like punctures; antennae and legs, yellow. Head about 3½ times as wide as thick antero-posteriorly; the lower part of face smooth, shining, with a slight grooved line from front ocellus, the rest of the head closely punctulate. Antennae 7-jointed, the club inarticulate; the first funicular joint is half the length of the pedicel, or twice as long as thick; the three following, transverse. The thorax exhibits two very short grooved lines posteriorly, just in front of the scutellum, that are evidently the beginning of the parapsidal furrows. Mesopleura with a crenulate femoral furrow. Metapleura punctate, divided into two parts by a fovea and a grooved line. Wings subhyaline, the nervures brown; the marginal vein is about half the length of the stigmal. Abdomen pointed-ovate, depressed, longer than the head and thorax together, minutely punctate, with a microscopic pubescence; the horn on the first segment reaches to the apex of the scutellum and is wholly longitudinally striated; the second segment is much wider but no longer than the first; the third segment is the longest and widest, being 2½ times as long as the second; the fourth, is about half the length of the second; the fifth still shorter; the sixth, very short, scarcely discernible; the seventh, pointed or conical, and longer than the fourth.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

Ceratobaeus binotatus sp. nov.

♀. Length, 0.8^{mm}. Head and thorax black, closely, minutely punctate; antennae, legs, and abdomen bright yellow, the latter with two

fuscous spots at base of second segment, but toward the lateral corners. Head very wide and thick antero-posteriorly. Eyes large, rounded, coarsely faceted. Antennæ 7-jointed, the club very large, inarticulated, and longer than the pedicel and funicle together; first funicular joint scarcely longer than thick, the other three exceedingly short, transverse. Thorax entirely without trace of furrows. Wings entirely wanting. Abdomen oval, not longer than the head and thorax together, faintly, microscopically punctate and shining; the first segment with a horn-like prominence, striated posteriorly; the second segment is a little longer than the first; the third, as long as the first and second together; the following segments short.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from 3 specimens, taken by Mr. E. A. Schwarz and myself.

This wingless species, but for the horn-like structure at base of abdomen, could easily be mistaken for an *Acolus*.

BÆUS Haliday.

Ent. Mag., 1, p. 270 ♀.

Hyperbraus Förster Hym. Stud., II, p. 144, 1856.

Trichasius Prov. Add. et Corr., p. 209, 1887.

Head very large, transverse, about twice as wide as the thorax, the frons broad, convex; ocelli 3, triangularly arranged but widely separated, the lateral being close to the margin of the eye; eyes very large, oval.

Antennæ inserted close to the clypeus; in ♀ 7-jointed, clavate, the club large, inarticulate; in ♂ 12-jointed, subclavate, the funicular joints after the second scarcely longer than wide, very slightly widened toward tips.

Maxillary palpi 2-jointed.

Thorax scarcely as long as wide, the pronotum not visible from above, the scutellum in ♀ not differentiated, while the metathorax is extremely short; in the ♂ the scutellum is distinct, semicircular, subconvex.

Wings in the ♂ with a distinct basal nervure, a short marginal, a long knobbed stigmal nervure and no post marginal; the ♀ always apterous.

Abdomen in ♀ oval, sessile, convex above, flat beneath, the third segment occupying nearly the whole surface, the first and second segments being visible only as transverse lines or wrinkles; in ♂ smaller, rounded and more flattened, the first and second segments very short, transverse, the third the largest segment.

Legs rather long, the femora clavate, the tibial spurs weak, the tarsi 5-jointed, the hind tarsi not longer than their femora, the basal joint being one-third longer than the second.

The absence of a scutellum readily distinguishes the females of this genus. The male was unknown to Haliday and Förster and is here

described for the first time. A single ♂ specimen (together with several females) was reared from spider eggs in an orange-colored cocoon by Mr. J. H. Emerton, in 1871, and is now in the Department of Agriculture. This single specimen has enabled me to perfect the diagnosis of the genus. It bears a close resemblance to the male in the genus *Acoloides*, but differs in having subclavate antennæ, a little longer marginal vein, longer stigmal vein, and a distinct basal nervure.

The habits of the genus were unknown to the European authorities, and we are indebted to an American, Mr. L. O. Howard, for first making us acquainted with them in this country. All that have been reared are from spider eggs.

The species known to me may be tabulated as follows:

TABLE OF SPECIES.

Body not entirely black	2.
Body entirely black.	
Head and thorax faintly microscopically punctulate; abdomen smooth, shining.	
Legs and antennæ fuscous.....	B. MINUTUS, sp. nov.
Legs, scape and funicle, brownish-yellow	B. NIGER, sp. nov.
2. Head black.	
Thorax and abdomen fuscous or piceous; legs and antennæ, brownish-yellow, the scape and pedicel at base, fuscous	B. PICEUS, sp. nov.
Thorax and abdomen brownish-yellow; legs and antennæ yellow, the club black.....	B. CLAVATUS, Prov.
Wholly dark honey-yellow.....	B. AMERICANUS, How.

Bæus minutus, sp. nov.

♀. Length, 0.5^{mm}. Black, shining, faintly microscopically punctulate, with a microscopic sericeous pubescence; antennæ and legs fuscous, or dark brown, the tarsi paler. Antennæ 7-jointed, very short, the club large, pointed-ovate; pedicel large, pale at tip; first funicular joint scarcely longer than thick; the remaining joints of funicle very minute, transverse. Abdomen broadly oval, convex, shining, impunctate, wider than the head and as long as the head and thorax united.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from 2 ♀ specimens received from W. Hague Harrington.

Bæus niger, sp. nov.

♀. Length, 0.7^{mm}. Black, shining, with a fine sericeous pubescence; head impunctate; eyes very large, nearly round, occupying the whole side of the head, pubescent; thorax not longer than the length of the head, microscopically punctate. Antennæ very short, the scape and funicle pale rufous or brownish-yellow, the club large, black. Legs brownish-yellow, the tibiæ with a slight dusky streak at the middle,

Abdomen long-oval, twice as long as the head and thorax together, the widest part as broad as the head.

HABITAT.—Washington, D. C.

Type in National Museum.

Described from a single specimen, taken September 21, 1884.

Bæus piceus, sp. nov.

♀. Length 0.6^{mm}. Brownish-piceous, smooth, shining, impunctured; antennæ and legs brownish-yellow, the scape and pedicel above fuscous, pale at tips; the three last funicle joints very minute transverse, the first not longer than thick, less than one-third the length of the pedicel. Abdomen oval, convex, polished and shining, a little longer than the head and thorax together.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from W. Hague Harrington.

Bæus clavatus Prov.

Trichasius clavatus Prov., Add. et Corr., p. 209.

Bæus clavatus Hargtn., Ins. Life, II, p. 359.

♀. Length 0.05 inch. Of a uniform reddish-brown, with the legs yellow. The club of the antennæ black. Thorax densely punctured, metathorax rugose. Legs pale yellow, the tarsi with the last joint brown. Abdomen browner than the rest, polished but not metallic. (Translated from Provancher.)

HABITAT.—Ottawa, Canada.

Type in Coll. Harrington.

Bæus americanus How.

(Pl. VIII, Fig. 9, ♂ ♀.)

Ins. Life, II, p. 270, Fig. 59.

♀. Length 0.65^{mm}. Length of antennal club 0.185^{mm}, or in other words the entire body is only 3½ times as long as the antennal club. Width of antennal club 0.082^{mm}. General color dark honey-yellow; scape and funicle of antennæ brownish, club lighter, dark at tip; vertex and face light honey-yellow; dorsum of thorax and abdomen dark honey-yellow, almost approaching mahogany; legs throughout concolorous with the head; middle and hind tibiæ a little darker near base. Surface of abdomen smooth, shiny; mesonotum very faintly punctate. Thorax and abdomen with extremely fine, sparse, whitish pile; tip of abdomen with a short and contracted fringe of white pile. Antennal club very large, longer than rest of funicle and pedicel together; funicle joints very narrow and short, subequal; pedicel wider and as long as entire funicle, except club. (Howard.)

♂. Length 0.8^{mm}. Dark honey-yellow; the head piceous, with a median carina anteriorly; antennæ and legs pale yellowish; abdomen small, rounded, fuscous, the basal segment short, transverse, striate. Wings hyaline, fringed, the venation pale brown, the basal nervure

distinct, the marginal nervure short, about twice as long as thick, the post-marginal nervure wanting, the stigmal long, oblique.

HABITAT.—Brooklyn, New York.

Types in National Museum.

This species, as we are informed by Mr. Howard, was reared by Col. Nicholas Pike from spider eggs in an orange cocoon belonging to the family *Epeiridae*.

The male, here described, was reared by Mr. J. H. Emerton, in 1871, together with several females, from an orange-colored spider's cocoon.

Tribe III.—TELEASINI.

An extensive tribe with few genera, but numerous in species, distinguished by the antennæ being inserted close together on a clypeal prominence; by the venation, the postmarginal vein never being developed, the marginal vein always greatly lengthened, and the stigmal vein always minute, scarcely developed; by the abdomen always being distinctly carinated along the sides, with the third segment the longest; and by the weak tibial spurs.

Under this tribe six genera are brought together, *Teleas*, *Prosacantha*, and allied genera.

Except in a single instance, the rearing of *Prosacantha caraborum*, by Dr. Riley, from the eggs of a beetle, *Chlænium impunctifrons*, nothing positively is known of the parasitism of the group. It is possible they confine their attacks to Coleopterous eggs, although *Prosacantha basalis* Förster is recorded as having been reared from Dipterous larvae. Since this record is totally at variance with the habits of the whole subfamily *Scelionina*, I question its accuracy, as I believe the whole group are egg parasites.

The genera may be tabulated as follows:

TABLE OF GENERA.

FEMALES.

- | | |
|---|--------------------|
| Abdomen broadly oval, the first segment wider than long..... | 3 |
| Abdomen long-oval, or long ovate, the first segment petioliform (longer than wide). | |
| First abdominal segment bearing a horn; postscutellum with three spines. | |
| | PENTACANTHA Ashm. |
| First abdominal segment without a horn. | |
| Mesonotum without furrows..... | 2 |
| Mesonotum with 2 furrows. | |
| Metascutellum with 3 spines | TRISSACANTHA Ashm. |
| Metascutellum with 1 spine..... | XENOMERUS Walk. |
| 2. Postscutellum with a single large spine, mandibles bifid, the outer tooth the longer. | |
| Posterior femora, tibiae, and tarsi slender; tibial spurs weak. | PROSACANTHA Nees. |
| Posterior femora swollen, tibiae dilated at apex, the basal tarsal joint short. stout; tibial spurs not weak..... | TELEAS Latr. |

3. Winged; mandibles bifid, the teeth equal.

Metascutellum with a spine, or tuberculate.....HOPLOGRYON Ashm., gen. nov.

Metascutellum simple.....GRYON Haliday.

Apterous.

Metascutellum with a small spine or tubercle.....(HOPLOGRYON).

Metascutellum without a spine, simple.....(GRYON).

MALES.

Abdomen broadly oval, the first segment wider than long..... 3

Abdomen long-oval, the first segment petioliform; the marginal vein very long.

Mesonotum without furrows; postscutellum spined..... 2

Mesonotum with 2 distinct furrows; posterior angles of metathorax usually spined or toothed.

Metascutellum with 3 spines; antennæ very long, filiform, pubescent.

TRISSACANTHA Ashm.

Metascutellum with 1 spine; antennæ with whorls of hair.

XENOMERUS Walk.

2. Antennæ long, filiform, the flagellar joints at least four times as long as thick, the third joint excised at base or angulated; posterior femora not swollen, the tibial spurs not developed, the basal tarsal joint long, slender.....PROSACANTHA Nees.

Antennæ filiform, the flagellar joints usually less than thrice as long as thick; posterior femora swollen, the tibial spurs developed, the basal joint short, stout.....TELEAS Latreille.

3. Marginal vein long, at least four or five times as long as the stigmal.

Metascutellum with a small spine or tubercle; antennæ filiform, the flagellar joints elongate.....HOPLOGRYON Ashm., gen. nov.

Metascutellum without a spine, simple; antennæ filiform, the flagellar joints scarcely longer than thick.....GRYON Haliday.

PENTACANTHA Ashm.

Can. Ent., xx, p. 51 (1888).

(Type, *P. canadensis* Ashm.)

Head transverse, the occiput straight, not emarginate, with a delicate margin extending on the cheeks, which are flattened; ocelli 3, in a triangle; eyes long-oval, hairy.

Antennæ inserted at the base of the clypeus, 12-jointed in both sexes, in the ♀ clavate, the club 6-jointed, the first funicular joint twice as long as the pedicel.

Maxillary palpi very short, 3-jointed.

Mandibles bidentate at apex, sinuate, and with a lobe at base within.

Thorax ovoid, the prothorax not visible from above; mesonotum wider than long, the scapulæ not separated; scutellum semicircular, rugose; postscutellum with 3 erect, conic teeth; metathorax very short, with prominent acute posterior angles that are connected with a carina.

Front wings as in *Prosacantha*.

Abdomen oblong-oval, narrowed at base, attached to metathorax far above the hind coxæ, and composed of six visible dorsal segments, the basal segment having a short, smooth, blunt horn, partly prolonged over the metathorax, the third segment the longest.

Legs rather long, slender, pilose, the tibiae clavate, their spurs weak, the tarsi much longer than the tibiae, slender, the claws simple.

Closely allied to *Prosacantha*, but readily distinguished by the postscutellum being armed with 3 spines, and the first abdominal segment bearing a horn, as in *Caloteleia* Westwood, in the tribe *Scelionini*. The male is unknown.

Pentacantha canadensis Ashm.

(Pl. VIII, Fig. 1, ♀.)

loc. cit. p. 51.

♀. Length, 2^{mm}. Black; thorax and scutellum coarsely shagreened, opaque; the head smooth, shining, with some grooved lines back of the eyes and on the occiput, the vertex rather acute. Antennae 12-jointed, brown, the first funicular joint twice as long as the pedicel, the second one-third shorter than the first, the third about as long as wide, the fourth wider than long; club 6-jointed. Thorax a little wider than long, without furrows, the postscutellum with 3 erect spines, the lateral posterior angles of the metathorax acutely spined. Legs, including anterior coxae, honey-yellow or brownish-yellow; middle of the femora and tibiae and the posterior coxae, dark brown or fuscous. Abdomen polished black, the third segment the longest and widest, the first with a horn at base, this as well as the second and the third, excepting on its disk, longitudinally striated. Wings subhyaline, the venation rufo-piceous.

HABITAT.—Ottawa, Canada, and Kansas.

Type, ♀ in Coll. Ashmead.

The type was described from a single specimen received from W. H. Harrington, but I have since seen a specimen in Prof. Popenoe's collection, taken in Riley County, Kans.

TRISSACANTHA Ashm.

Ent. Am., III, p. 101 (1887).

(Type, *T. americana* Ashm.)

Head transverse, the occiput almost straight, margined; ocelli 3, close together in a triangle; eyes oval.

Antennae inserted on a clypeal prominence, 12-jointed, in ♂ very long, filiform, cylindrical, the scape extending to the ocelli, the pedicel very small, annular, the third funicular joint bent and angulated at the middle.

Maxillary palpi 3-jointed.

Mandibles bidentate at tips, the teeth equal.

Thorax ovoid, the prothorax slightly visible from above, the mesonotum smooth, wider than long, with two delicate but distinct furrows, scutellum semicircular, convex, metascutellum armed with 3 erect spines, metathorax short, the pleura more or less covered with a grayish woolly pubescence, the angles acute.

Front wings pubescent, ciliated, the cilia on hind margin very long, the marginal vein linear, about five times as long as the short stigmal, the postmarginal wanting.

Abdomen long-oval, depressed, sparsely pilose, the first segment longer than wide, fluted, the third the largest; the first three segments are longitudinally striated.

Legs rather long, slender, pilose, the tibial spurs minute, the tarsi slender but spinulose.

This genus, known only in the male sex, is distinguished from *Proscantha* by the 3-spined postscutellum, and in having distinct mesonotal furrows; from *Xenomerus*, which also has mesonotal furrows, it is separated by the postscutellum and the filiform antennæ.

It may be the opposite sex of *Pentacantha*, agreeing with it in its postscutellar character, but *the mesonotum has two distinct furrows*, and as I know of no genus in the *Proctotrypidæ* having the mesonotum grooved in one sex and plain in the opposite, I believe it to be distinct. This character, used in the table of the males, is therefore repeated in the generic table of the females.

Only two species are known to me, which may be separated as follows:

Black; legs rufous, coxæ black.

Scutellum smooth, polished.....T. AMERICANA Ashm.

Scutellum rugose.....T. RUGOSA, sp. nov.

***Triassacantha americana* Ashm.**

(Pl. VIII, Fig. 2, ♂.)

Ent. Am., III, p. 117; Cress. Syn. Hym., p. 313.

♂. Length, 2.5^{mm}. Polished black, pubescent; head and occiput with some striae; mandibles piceous; legs rufous, the coxæ black. Antennæ 12-jointed, filiform, black, longer than the body, the scape not much longer than the first flagellar joint, the pedicel annular, the flagellar joints all long, cylindrical, the first about five times as long as thick, the second shorter, the third angulated at the middle and slightly excised at base. Mesonotum with two distinct furrows; scutellum semicircular, smooth, polished; postscutellum with three erect spines, the middle the longest. Abdomen longer than the head and thorax together, longitudinally striated. Wings fusco-hyaline, pubescent.

HABITAT.—Florida, District of Columbia and Virginia.

Type in Coll. Ashmead; specimens in National Museum.

This species was originally described from a specimen taken by myself in Florida, but I have since seen specimens taken in Virginia and District of Columbia.

***Triassacantha rugosa*, sp. nov.**

♂. Length, 2.5^{mm}. Black, shining, pubescent; head above, collar and scutellum rugoso-punctate, the mesonotum smoother, the face near

the eyes, striated. Antennæ 12-jointed, brown-black, longer than the body. Mesonotum smooth, shining, with two furrows and a few scattered punctures; middle spines of postscutellum twice as long and much stouter than the lateral spines, curved and rather blunt at apex; metathorax with prominent angles. Abdomen black, shining, striated. Wings hyaline, pubescent, the marginal vein six times as long as the short stigmal. Legs rufous, the coxæ black.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen, which is readily distinguished from *T. americana* by the rugosity of the vertex, collar, and scutellum.

XENOMERUS Walker.

Ent. Mag., III, p. 355 (1836).

(Type *X. ergenna* Walk., ♂; *Teleas medon* Walk., ♀.)

(Pl. VIII, Fig. 3, ♂.)

Head large, transverse, broader than the thorax, the occiput slightly emarginated, with a delicate margin; ocelli three in a triangle, the lateral away from the margin of the eye; eyes rounded, pubescent.

Antennæ 12-jointed in both sexes, inserted on the clypeus, in ♀ terminating in a 5- or 6-jointed club, in ♂ pedicellate-nodose, with whorls of long hairs.

Maxillary palpi 3-jointed.

Mandibles bidentate.

Front wings as in *Teleas*, with a long marginal vein and a short stigmal.

Abdomen broadly oval, the first and second segments short, the first about twice as wide as long, both striated, the third segment large, the following very short.

Legs long, slender, pubescent; the tibial spurs weak, the tarsi long. slender; the basal joint of the hind tarsi more than twice as long as the second; claws simple.

The genus is readily distinguished in the male sex by the verticillate antennæ, and in the female from *Teleas*, *Prosaecantha*, and allied genera by having distinct mesonotal furrows; from *Trissacantha*, which also has mesonotal furrows, it is distinguished by having a single post-scutellar spine.

Xenomerus pallidipes, sp. nov.

♀. Length, 1.4^{mm}. Polished black, shining, sparsely pubescent; head transverse, with the eyes slightly wider than the thorax, the latter slightly pubescent.

Antennæ 12-jointed, clavate, the club 6-jointed, the scape pale brown, the flagellum black; the pedicel is shorter than the first funicular joint; the first and second funicular joints longer than thick, the third and fourth small, transverse; club joints, except the last, transverse.

Thorax with two impressed lines subobsolete posteriorly; scutellum convex, separated from the mesonotum by a transverse line; metascutellum armed with a small acute tooth. Wings hyaline, ciliated. Legs pale brownish-yellow, the coxæ dusky basally. Abdomen longer than the head and thorax together, narrowed basally into a petiole and inserted far up on the metathorax behind the postscutellum, black and polished.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen.

The insect described by me, in the beginning of my studies on this family, under the name *X. rubicola*, is a ♂ Pteromalid belonging to a genus unknown to me.

PROSACANTHA Nees.

Mon., II, p. 294 (1834); Förster. Hym. Stud., II, p. 103 (1856).

(*P. longicornis* Nees.)

Head transverse, the occiput slightly emarginated and delicately margined; ocelli 3, in a triangle, rather close together, the lateral very distant from the margin of the eye; eyes oval, pubescent.

Antennæ inserted on a clypeal prominence, 12-jointed, in ♀ terminating in a long, fusiform, 6-jointed club; the funicular joints thicker than the pedicel, the first two joints longer than wide; in ♂ long, filiform, the joints long, cylindrical, the third angulated or emarginated from near the middle towards the base.

Maxillary palpi 3-jointed.

Mandibles curved, bidentate at tips, the teeth in the left mandible equal, in the right with the outer tooth the longer.

Thorax ovoid, the prothorax scarcely visible from above, narrowed into a slight neck anteriorly; mesonotum broader than long, without furrows, seldom occasionally with indications of furrows posteriorly. Scutellum large, semicircular, subconvex; metathorax armed with a large sharp spine or thorn; metathorax very short, the posterior angles usually acute or spined.

Front wings pubescent, ciliated, with a very long marginal vein that ends at two-thirds the length of the wing and is 6 or 7 times longer than the short stigmal vein, the postmarginal never developed.

Abdomen long-oval, depressed, longer than the head and thorax together, inserted high up on the metathorax, the first segment petioform, much longer than wide, fluted or striated, the third segment always large and occupying more than half the rest of the abdomen, either smooth or striated, the following segments very short.

Legs long, slender, pubescent; the femora not especially thick; the tibial spurs weak; the tarsi long, slender, cylindrical, claws simple.

A genus most frequently confused with *Teleas*, but easily separated by the much slenderer hind legs and the weaker tibial spurs.

TABLE OF SPECIES.

FEMALES.

- Antennæ not annulated with white. 2
 Antennæ annulated with white.
- First, second, and third funicular joints white. *P. ANNULICORNIS*, sp. nov.
2. Antennæ not wholly black, the scape rufous or yellow. 4
 Antennæ with the scape pale only at base. 3
 Antennæ wholly black.
- Legs wholly black.
- Thorax rugose, opaque.
- Face longitudinally striate. *P. NIGRIPES*, sp. nov.
- Thorax finely punctate, shining.
- Face striate toward base of antennæ *P. MELANOPUS*, sp. nov.
- Thorax smooth, shining at the most microscopically punctate.
- Face smooth, shining. *P. PENNSYLVANICA*, sp. nov.
- Legs not wholly black.
- Legs, except knees and tarsi, black or dark fuscous.
- Thorax rugoso-punctate; lower part of face striate.
- Scutellum rugose, opaque; wings abbreviated. *P. UTAHENSIS*, sp. nov.
- Scutellum smooth, polished. *P. CALIFORNICA*, sp. nov.
- Thorax closely striately punctate; scutellum faintly punctate, opaque.
- Face smooth, shining. *P. LÆVIFRONS*, sp. nov.
- Thorax finely rugose, subopaque; scutellum shining, faintly punctate.
- Face shining but sparsely finely punctate. *P. NANA*, sp. nov.
3. Coxæ black; legs, unless otherwise mentioned, pale rufous.
- Thorax closely punctulate.
- Face highly polished; tibiæ and tarsi, fuscous *P. CARABORUM*, Riley.
- Thorax and scutellum longitudinally rugulose.
- Frons polished but with some scattered punctures.
- *P. PUNCTIVENTRIS*, sp. nov.
- Thorax and scutellum finely rugoso-punctate, opaque.
- Frons shining, feebly shagreened, with some scattered punctures.
- *P. SCHWARZII*, sp. nov.
- Thorax polished, sparsely punctate; scutellum polished.
- Frons polished; posterior tibiæ fuscous above. *P. PUSILLA*, sp. nov.
- Thorax finely punctulate; head and scutellum smooth, shining; legs pale brownish-yellow. *P. GRACILICORNIS*, sp. nov.
- Coxæ and legs pale rufous or brownish-yellow.
- Thorax and scutellum rugoso-punctate.
- Frons smooth, sparsely punctate. *P. MARYLANDICA*, sp. nov.
- Frons coarsely longitudinally striate. *P. FUSCIPENNIS*, Ashm.
- Thorax and scutellum shining, faintly punctate.
- Frons smooth, with some small, faint punctures. *P. COLUMBIANA*, sp. nov.
- Thorax finely punctulate with indications of furrows posteriorly; scutellum smooth, shining.
- Frons highly polished, impunctate. *P. BILINEATA*, sp. nov.
- Thorax and scutellum finely rugose, opaque; pleura rufous.
- Frons shining, sparsely, faintly punctate. *P. PLEURALIS*, sp. nov.
4. All coxæ, except sometimes the last pair, pale. 5
 All coxæ black.
- Thorax and scutellum coarsely longitudinally rugulose.
- First funicular joint one-third shorter than the second; legs rufous; three basal segments of abdomen striate. *P. COXALIS*, sp. nov.

Thorax finely, closely punctate; the scutellum smooth, polished.

First and second funicular joints long equal, about 5 times as long as thick;
legs pale brownish-yellow.....P. GRACILICORNIS, sp. nov.

5. Legs rufous.

Thorax and scutellum rugose, opaque.

Inner orbits and lower parts of face and the cheeks striate; wings hyaline.
P. LINELLII, sp. nov.

Thorax and scutellum sparsely punctate, shining.

Inner orbits and lower part of face striate; wings fuscous.

P. ERYTHROPUS, sp. nov.

Legs yellow.

Thorax and scutellum rugulose, opaque.

Head polished, inner orbits and lower part of face striate; wings hyaline;
coxæ yellow.....P. FLAVICOXA, sp. nov.

Thorax and scutellum coarsely rugulose, opaque.

Head polished, inner orbits not striate, wings subfuscous, hind coxæ black.

P. AMERICANA, Ashm.

Thorax punctate, shining, with indications of furrows posteriorly; the scutellum smooth.

Head polished, the lower part of face and cheeks striate; wings hyaline;
petiole of abdomen yellow.....P. FLAVOPETIOLATA, sp. nov.

MALES.

Antennæ not wholly black..... 2

Antennæ wholly black.

Legs wholly black; face longitudinally striated.

Antennæ shorter than body, first flagellar joint less than four times as long
as thick..... P. NIGRIPES, sp. nov.

Legs brownish-yellow.

Antennæ much longer than the body, first flagellar joint 6 times as long as
thick.....P. STRIATIFRONS, sp. nov.

2. First flagellar joint not as long as the scape..... 3

First flagellar joint longer than the scape.

Thorax finely rugose, smoother on shoulders; scutellum smooth, with punctures
at base.

Legs brownish yellow, middle tarsi and posterior tibia and tarsi, fuscous.

P. CARABORUM, Riley

3. Thorax closely punctate or rugose..... 4

Thorax smooth, shining, faintly punctate; legs brownish-yellow.

First flagellar joint 4 times as long as thick, a little shorter than the following;
Frons polished.

Third abdominal segment not aciculate or punctate; petiole black.

P. COLUMBIANA, sp. nov.

Third abdominal segment smooth, impunctate; petiole yellow.

P. FLAVOPETIOLATA.

Frons striated.

Third abdominal segment finely aciculated and punctate; petiole dull
rufous.....P. MACROCERA, Ashm.

4. First flagellar joint shorter than the second.

Thorax and scutellum closely punctate, shining.

Lower part of the face striate; mandibles large, yellow.

P. XANTHOGNATHA, sp. nov.

Thorax rugose, opaque or subopaque, pubescent.

Frons longitudinally striate; mandibles and legs rufous.

P. MARYLANDICA, sp. nov.

First flagellar joint longer than the second, abdomen longitudinally striated.

P. STRIATIVENTRIS, sp. nov.

Prosacantha annulicornis, sp. nov.

♀. Length, 2 to 2.2^{mm}. Head and abdomen black, shining; the thorax dull rufous, punctate, the metathorax and metapleura stained with black. Head transverse, the vertex subacute, face smooth, with a few scattered punctures, the orbits longitudinally aciculated. Antennæ 12-jointed, long; the scape long, rufous, extending one-third its length beyond the ocelli, its apex and the pedicel fuscous; the first three funicular joints are long, subequal in length, yellowish-white; the fourth funicular joint and the club, black; the fourth funicular joint is a little longer than thick and fully as thick as the preceding joints. Scutellum roughly punctate; the post-scutellum armed with an unusually long acute spine. Metathorax with the angles acute. Wings fuscous, paler basally. Legs pale rufous, the coxæ and trochanters yellowish, the tips of the femora and tibiæ a little fuscous. Abdomen as long as the head and thorax together, polished, the petiole and the second segment longitudinally striated.

HABITAT.—Washington, D. C.

Types in National Museum, American Entomological Society, and Coll. Ashmead.

Described from many specimens, taken in winter, by sifting.

Prosacantha nigripes, sp. nov.

♂ ♀. Length, 2 to 2.4^{mm}. Black; thorax and scutellum finely rugose, subopaque; head transverse, vertex punctate, the occiput transversely aciculated, the face longitudinally striate, the cheeks with striæ converging toward the mouth. Mandibles rufous. Antennæ 12-jointed, black, scape not extending beyond the middle ocellus; pedicel small; the first three funicular joints nearly equal in length, about thrice as long as thick.

Posterior angles of metathorax with a short tooth. Legs entirely black. Wings fuscous. Abdomen slightly longer than the head and thorax together, polished, the petiole and second segment longitudinally striated, the disk of the third segment faintly longitudinally aciculated.

In the ♂ the antennæ reach to the middle of the abdomen. The flagellar joints very slightly subequal, the first the longest and thickest, four times as long as thick.

HABITAT.—The Dalles and Portland, Oregon.

Types in Coll. Ashmead.

Described from specimens received from Mr. H. F. Wickham.

Prosacantha striatifrons, sp. nov.

♂. Length, 2^{mm}. Black; head broadly transverse, shining, vertex smooth, frons and face longitudinally striated; mandibles long, falcate, pale rufous; thorax and scutellum rugulose, opaque; legs brownish-

yellow. Antennæ 12-jointed, filiform, black; first funicle joint 6 times as long as thick; second slightly shorter; third still shorter; fourth and following longer than third, but not quite as long as the second. Post-scutellar spine long, acute. Angles of metathorax acute. Wings subhyaline, the nervures pale brown. Abdomen broadly oval, black, shining, the first and second segments and the third, on disk, longitudinally striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen.

Prosacantha melanopus, sp. nov.

♀. Length, 1.4^{mm}. Black, shining; face perfectly smooth; thorax and scutellum faintly microscopically punctate, but not sufficient to destroy the smoothness or luster of the surface. Mandibles dull, rufous. Antennæ 12-jointed, short, black; scape long, pedicel two-thirds the length of the first funicular joint; the first and second funicular joints nearly equal, the second the smaller; third and fourth, minute, transverse; club 6-jointed, as long as the pedicel and all the funicular joints together; the joints transverse, about twice as wide as long. Wings fuscous. Legs black; tip of trochanters and base of tarsi, piceous or brownish. Abdomen as long as the head and thorax together, smooth, shining; the petiole and first segment striated.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

Prosacantha pennsylvanica, sp. nov.

♀. Length, 1^{mm}. Black, shining, sparsely pubescent, the punctuation of the thorax very fine and faint. Antennæ 12-jointed, black, not extending beyond the base of abdomen; first funicular joint scarcely as long as the pedicel, the second shorter, the third and fourth minute, transverse. Wings hyaline, strongly iridescent, with a faint fuscous tinge. Legs brown-black, trochanters, knees, tips of tibiæ and base of tarsi yellowish. Abdomen broadly oval, not as long as the head and thorax together, smooth, polished, with a fine pubescence; the petiole longer than thick, striated; the second segment with some striae at base.

HABITAT.—Pennsylvania.

Type, ♀ in Berlin Museum.

Described from a single specimen labeled "Penna. Zimmermann."

Prosacantha utahensis, sp. nov.

♀. Length, 1.5^{mm}. Black; thorax and scutellum rugoso-punctate, opaque; head almost smooth, shining, the face with delicate striae

toward the orbits and on cheeks below the eyes. Mandibles rufous. Antennæ 12-jointed, black; the pedicel half the length of the first funicular joint; pale at tip; second funicular joint one-third shorter than the first, third and fourth minute, transverse; club as long as the funicle, the joints transverse. Wings abbreviated, not extending beyond the base of second abdominal segment. Legs black, articulations of trochanters, knees, and the tarsi, rufous. Abdomen a little longer than the head and thorax together, shining; the first and second segments coarsely striated, the following segments shagreened, or with a scaly punctuation; venter except the first segment, feebly microscopically punctate.

HABITAT.—Park City, Utah.

Type ♀ in Coll. Ashmead.

Described from a single specimen collected by Mr. E. A. Schwarz.

Prosacantha californica, sp. nov.

♀. Length, 1.8^{mm}. Black; thorax finely rugoso-punctate, opaque; the scutellum smooth, shining; head smooth, shining, the orbits and lower part of the cheeks, striated. Mandibles piceous. Antennæ 12-jointed, black, the pedicel about half the length of the first funicular joint, the second funicular joint very slightly shorter than the first, the third and fourth, minute, rounded; club as long as the funicle and the pedicel together, the joints transverse. Metapleura polished. Hind angles of metathorax toothed. Wings subfuscous, fully developed, the margins ciliated. Legs black, the articulations and the tarsi fuscous. Abdomen oblong-oval, not longer than the head and thorax together, polished, impunctured, the first segment and the second at base alone, striated.

HABITAT.—Santa Cruz Mountains, Cal.

Type in Coll. Ashmead.

Described from 1 specimen.

Prosacantha lævifrons, sp. nov.

♀. Length, 1^{mm}. Black; thorax closely, striately punctate, opaque; the scutellum feebly, minutely punctate, subopaque; head shining, the face polished, the cheeks with striæ below the eye, the occiput closely punctate. Mandibles rufous. Antennæ 12-jointed, short, black, the first and second funicular joints equal, only one-third longer than the pedicel, the third and fourth, minute, transverse, club longer than the funicle, the joints transverse. Postscutellar spine very minute. Legs fuscous, the trochanters, knees and tarsi, pale brown. Wings subfuscous, pubescent. Abdomen broadly oval, shining, the first and second segments striated, the following microscopically punctate.

HABITAT.—Washington, D. C., and Arlington, Va.

Types in Coll. Ashmead.

Described from 3 specimens,

Prosacantha nana, sp. nov.

♀. Length, 1^{mm}. Black; thorax finely rugose, subopaque, the scutellum smooth, shining, faintly punctate; head smooth, shining, the face polished, very sparsely, finely punctate above. Mandibles black. Antennæ 12-jointed, black, the pedicel two-thirds the length of the first funicular joint, the second funicular joint slightly shorter than the first, the third and fourth, minute, transverse, club as long as the funicle, excluding the pedicel, the joints transverse. Postscutellar spine very minute. Wings subfuscous. Legs black, the tarsi fuscous. Abdomen longer than the head and thorax together, polished, the first segment and the second basally, striated.

HABITAT.—Utah Lake, Utah.

Type in Coll. Ashmead.

Described from a single specimen, received from Mr. E. A. Schwarz.

Prosacantha caraborum, sp. nov. Riley.

(Pl. VIII, Fig. 4, ♀.)

“♀. Length, 1.8^{mm}. Black, shining, the thorax finely rugulose, the scutellum almost smooth. Head transverse, thrice as wide as long, the occiput longitudinally striated, the face smooth with a delicate carina extending from the front ocellus to the base of the antennæ; lower part of orbits and cheeks with striæ converging toward the mouth; mandibles pale rufous, deeply bifid at tips; antennæ 12-jointed, about as long as the body, slender, dark brown or black, the scape a little pale at extreme base; pedicel about as long as the third funicular joint; the first and second funicular joints elongate, equal, about twice as long as the pedicel, the fourth subequal with the third; club 6-jointed, slender, long, fusiform. Metanotum with silvery pubescence; tegulæ black; wings hyaline, the venation pale brownish-yellow. Legs reddish-yellow, the coxæ basally and the middle and posterior tibiæ and tarsi, fuscous. Abdomen as long as the head and thorax together, shining, with a sparse, fine pubescence toward the apex; the first three segments longitudinally striated.

“♂. Smaller (1.6^{mm}) and remarkable for the very long, filiform, hairy antennæ which are fully twice the length of the whole insect; they are black, the scape rufous, the pedicel round; the flagellar joints all exceedingly long and slender, longer than the scape, the third being angularly produced toward the base.”—[From Riley's MS.]

HABITAT.—Washington, D. C., and Arlington, Va.

Types in National Museum and Coll. Ashmead.

Reared by Dr. Riley in June, 1884, from the eggs of a Carabid beetle (*Chlaenius impunctifrons*), and also taken by me in Virginia by sweeping.

Prosacantha punctiventris, sp. nov.

♀. Length, 2.5^{mm}. Black; thorax and scutellum longitudinally rugulose, subopaque; head very broad, shining; face smooth, with scattered punctures; lower part of face and cheeks striated. Antennæ 12-jointed, black, the scape basally rufous; first flagellar joint twice the length of the pedicel the second one-third shorter than the first but a little stouter, the third and fourth transverse-quadrate; club shorter than the funicle. Mesopleura rugose. Postscutellar spine triangular, rugose. Lower part of metapleura striated. Angles of metathorax produced into triangular teeth. Wings subfuscous, the marginal vein less than five times as long as the stigmal. Legs pale rufous, the coxæ black. Abdomen broadly oval, shining, the first segment coarsely striated, the disks of the second and third finely striated, the venter punctate.

HABITAT.—Fortress Monroe, Va., and District of Columbia.

Types in Coll. Ashmead.

Described from 5 specimens collected by Mr. E. A. Schwarz.

Prosacantha Schwarzii, sp. nov.

♀. Length, 1.5^{mm}. Black; thorax and scutellum finely rugoso-punctate, opaque; head shining, the frons feebly shagreened, the face and cheeks strongly striated. Mandibles rufous. Antennæ 12-jointed, black, the scape paler at base; pedicel pale at apex, a little shorter than the first funicular joint; the first and second funicular joints about of an equal length, the second the stouter; the third and fourth minute, transverse; club as long as the pedicel and funicle together. Mesopleura rugose. Post-scutellar spine triangular. Angles of metathorax acute. Wings subhyaline, the marginal vein 4 times the length of the stigmal. Legs brownish-yellow, the coxæ black. Abdomen broadly oval, the first segment and the second, for two-thirds its length, coarsely striated; rest of the abdomen smooth, polished.

HABITAT.—Washington, D. C.

Type ♀ in Coll. Ashmead.

Described from a single specimen taken by E. A. Schwarz, and in honor of whom this species is dedicated.

Prosacantha pusilla, sp. nov.

♀. Length, 1^{mm}. Black, polished, shining, the thorax feebly, sparsely punctate; frons polished, impunctate, lower part of face and cheeks striated. Mandibles and legs brownish-yellow, the coxæ black. Antennæ black, the scape pale at extreme base; pedicel and second funicular joint of an equal length, the first a little longer; third and fourth minute, transverse. Post-scutellar spine acute. Wings subhyaline, the marginal vein six times the length of the stigmal. Abdomen oblong-oval, highly polished, impunctured, the first segment and the second

for two-thirds its length, coarsely striated, the third with a row of very short striæ at extreme base.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen.

Prosacantha gracilicornis, sp. nov.

♀. Length, 1.8^{mm}. Black; head and scutellum smooth, polished; thorax finely, closely punctate, opaque; legs pale brownish-yellow, the coxæ black basally. Antennæ 12-jointed, brown-black, the scape pale at base, long and slender, about as long as the body; the scape extends slightly beyond the ocelli, slender, a little thickened at the middle; pedicel cyathiform; first and second funicular joints long, equal, about five times as long as thick, the third half the length of second; the fourth still shorter, a little longer than thick; club 6-jointed, very slender, and about as long as the first and second funicular joints together, the joints only slightly wider than long. Wings hyaline, pubescent, the venation brown. Abdomen a little longer than the head and thorax together, the petiole longer than thick, finely pubescent and coarsely striated, the second segment coarsely striate at base only, the third with some fine longitudinal aciculations basally.

HABITAT.—Carolina.

Type in Berlin Museum.

Described from a single specimen, labeled simply "Carolina, Zimmermann."

Prosacantha marylandica, sp. nov.

♂ ♀. Length, 2^{mm}. Black; thorax and scutellum rugoso-punctate; head smooth with some sparse punctures and some broad but not deep striæ on lower part of the face. Mandibles pale rufous. Antennæ black, the scape basally and the pedicel at apex yellowish; the first funicular joint is twice the length of the pedicel and one-third longer than the second; third and fourth joints small, transverse. Legs, including coxæ, brownish-yellow. Post-scutellar spine large, triangular, nearly horizontal and projecting over the base of the scutellum. Wings subhyaline, the marginal vein at least six times as long as the stigmal. Abdomen oblong-oval, longitudinally striated, the fourth and following segments and the venter, punctate.

In the male the post-scutellar spine is not so decumbent, and does not project over the base of the abdomen; the third abdominal segment is smoother and shows only a few longitudinal striæ on the disk; while the antennæ are long, filiform, the first flagellar joint the longest, about five times as long as thick, the following a little shorter.

HABITAT.—Oakland, Md.

Types in Coll. Ashmead.

Described from specimens received from Mr. E. A. Schwarz.

Prosacantha fuscipennis Ashm.

Ent. Amer., III, p. 117; Cress. Syn. Hym. p. 313.

♂. Length, 2.2^{mm}. Robust, black; thorax and scutellum coarsely rugoso-punctate, opaque; head large, broad, shining, vertex polished, the frons and face coarsely, longitudinally striate. Antennæ 12-jointed, long, filiform, brown-black, the scape towards basal half rufous; first flagellar joint the longest, the third, the shortest and emarginated at base; the joints after the third longer, very slightly increasing in length to the last. Legs rufous, the hind coxæ sometimes black. Post-scutellar spine large, triangular, acute. Wings fuscous or subfuscous, the marginal vein nearly six times as long as the stigmal. Abdomen oblong-oval, polished, the first and second segments coarsely longitudinally striated, the third feebly longitudinally striated, the following smooth.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Prosacantha columbiana, sp. nov.

♀. Length, 2.2^{mm}. Black, shining, sparsely, faintly, minutely punctate; the head polished, lower part of orbits, on either side of the insertion of the antennæ and cheeks, striated. Mandibles reddish-yellow. Antennæ brown-black, the basal half of scape and tubercles pale rufous; first and second joints of funicle of an equal length, twice the length of the pedicel, the third and fourth transverse. Legs, including coxæ, brownish-yellow. Post-scutellar spine acute, triangular; metapleura smooth, polished. Wings subfuscous, hyaline toward base. Abdomen oblong-oval, polished, the first and second segments coarsely striated, the third more or less striated basally, and the rest of the segments smooth, impunctured.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Prosacantha bilineata, sp. nov.

♀. Length, 1.5^{mm}. Black, shining, the thorax, excluding the scutellum, minutely punctulate, with indications of furrows posteriorly; head highly polished, impunctate, with some striæ toward the mouth. Mandibles piceous. Antennæ 12-jointed, black, the extreme base of scape reddish; first funicular joint not quite twice as long as the pedicel, the second, a little shorter, third and fourth, small, transverse. Legs, including coxæ, pale rufous. Post-scutellar spine very acute. Metathorax with small acute teeth at the posterior angles, the metapleura crenulate. Wings hyaline, the venation yellowish. Abdomen oblong-oval, smooth, shining, the first segment and the second at base, striated.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead.

Described from 4 specimens.

Prosacantha pleuralia, sp. nov.

♀. Length, 1.5^{mm}. Black, opaque, finely rugose, the face smooth, shining, the pleura rufous, the mesonotum with slight indications of furrows posteriorly. Mandibles large, falcate. Antennæ 12-jointed, brown-black, the basal half of scape pale; first and second funicular joints nearly equal in length, the second, slightly the longer, third and fourth joints not minute, fully as thick at apex as the preceding joints, subquadrate. Legs, including coxæ, brownish-yellow. Post-scutellar spine rather large, acute, oblique. Wings subfuscous, hyaline at base, the venation brown. Abdomen oblong-oval, polished, shining, the first and second segments of an equal length, striated.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Described from 2 specimens.

Prosacantha Linelli, sp. nov.

♀. Length, 2.2^{mm}. Black; the thorax and scutellum finely rugose, opaque; the head broad, shining, inner orbits and lower part of face coarsely striated, the middle of face smooth, shining, with a few minute punctures, the cheeks with punctate striæ. Antennæ 12-jointed, brown-black, the scape towards base, brown; first flagellar joint about twice as long as the pedicel, the latter pale at apex; the second, one-third shorter than the first; third and fourth, transverse. Post-scutellar spine large, triangular. Wings hyaline, the venation pale brownish. Legs, including coxæ, reddish-yellow. Abdomen oblong-oval, shining, the first and second segments striated, the third, with some faint striæ toward base.

HABITAT.—Long Island, New York.

Type in Coll. Ashmead.

Described from a single specimen obtained from Mr. Martin Linell.

Prosacantha erythropus, sp. nov.

♀. Length, 2.2^{mm}. Robust, black, shining, punctate; head very wide, inner orbits, cheeks, and lower part of face, striated; apical half of scutellum smooth, impunctate; scape, mandibles, and legs, reddish-yellow; flagellum brown-black. Antennæ 12-jointed, the flagellum stout; the second funicular joint one-half longer than thick, and a little shorter than the first, third and fourth transverse-quadrate. Post-scutellar spine large acute. Angles of metathorax spined. Wings fuscous. Abdomen oblong-oval, shining, the first and second segments and the basal two-thirds of the third longitudinally striated, the rest smooth.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Described from two specimens.

Prosacantha flavicoxa, sp. nov.

♀. Length, 2.1^{mm}. Black; head wide, sparsely punctate, shining, the inner orbits and lower part of face striated; thorax and scutellum rugulose, opaque, pubescent; scape and legs, including all coxæ, bright yellow; flagellum black. Antennæ 12-jointed; first funicular joint about twice as long as the pedicel, $2\frac{1}{2}$ times as long as thick; second joint shorter; third and fourth minute, transverse; club 6-jointed, about as long as the funicle, the joints transverse, the second a little the longest joint. Postscutellar spine triangular, acute, horizontal. Angles of metathorax acutely spined. Wings clear hyaline, the nervures yellowish. Abdomen oblong-oval, polished, black, the first and second segments striated.

HABITAT.—Virginia.

Type in Coll. Ashmead.

Described from a single specimen.

Prosacantha americana Ashm.

Ent. Am., III, p. 116, ♂; Cress. Syn. Hym., p. 313.

♂. Length, 1.2^{mm}. Black; head transverse but thick, polished, the face smooth, with some faint striæ only below the eyes, the inner orbits not striated; thorax and scutellum coarsely rugulose, opaque; antennæ long, filiform, the scape pale only at base; legs yellow. the coxæ black, shining.

Post-scutellar spine small. Angles of metathorax subacute, small. Wings subhyaline, the nervures brown. Abdomen broadly oval, the first and second segments striated, the following smooth, polished, black.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Prosacantha flavopetiolata, sp. nov.

♂. Length, 1.5^{mm}. Black, shining, very sparsely punctate; head transverse, not thick, the face highly polished, impunctate; mandibles and legs brownish-yellow; thorax with faint indications of furrows posteriorly. Antennæ long, filiform, 12-jointed, black, the scape yellowish beneath; the flagellar joints long, cylindrical, the second a little longer than the first, the third thickened toward tip. Post-scutellar spine small, triangular. Angles of metathorax not prominent or acute. Wings hyaline, the nervures pale brown, the marginal vein very long and slender, the stigmal very short but ending in a little knob. Abdomen broadly oval, black, shining, the petiole yellow, the first and second segments striated, rest of the segments polished, impunctured.

♀. Length, 1.2^{mm}. Differs from male in having the thorax and scutellum closely punctulate, opaque, the scutellar spine larger and

broad at base, while the antennæ are clavate, black, the scape yellow, the first and second funicular joints equal, twice as long as thick, the third and fourth, small, transverse.

HABITAT.—District of Columbia and Arlington, Va.

Types in Coll. Ashmead.

Prosacantha macrocera Ashm.

Ent. Am. III, p 117, ♂ ; Cress. Syn. Hym., p. 313.

♂. Length, 1.8^{mm}. Black, shining, faintly punctate; head wide, the frons and face striated; mandibles large, rufous; legs rufous. Antennæ 12-jointed, very long, cylindrical, brown-black, the scape rufous; first and third funicular joints about equal in length, a little shorter than the second, the third angulated outwardly a little before the middle; fourth joint and the following, longer. Scutellum polished, sparsely punctate at base. Post-scutellar spine large, acute, erect, very slightly curved. Angles of metathorax acute. Wings subfuscous, fringed. Abdomen oblong-oval, shining, but minutely sparsely punctate, the first and second segments and the third, on disk, longitudinally striated or aciculated; the first segment brownish or dull rufous, rest of the segments black.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Prosacantha xanthognatha, sp. nov.

♂. Length, 1.5^{mm}. Black, shining; head very wide, polished, the frons smooth. The inner orbits and lower part of face striated; mandibles large, yellow, the teeth in the left mandible about equal, in the right with the outer the longer; thorax and scutellum closely punctulate or minutely rugulose, shining, the parapsidal furrows slightly indicated posteriorly; legs brownish-yellow. Antennæ 12-jointed, brown-black, the scape yellowish; first flagellar joint a little shorter than the second; fourth and following longer than the second. Post-scutellar spine triangular, acute, oblique. Angles of metathorax subacute. Wings subfuscous, not fringed, the nervures brown. Abdomen oval, black, shining, the first and second segments coarsely striated, the third and following punctate.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Closely allied to *P. macrocera* but slightly smaller, the thorax more closely punctate, the antennæ shorter, the third flagellar joint not angulated, while the wings are not fringed.

Prosacantha striativentris, sp. nov.

♂. Length, 1.5^{mm}. Black; the head and abdomen shining; the thorax opaque, minutely, closely punctulate; abdomen wholly longi-

tudinally striated; legs brownish-yellow, the coxæ dusky basally. Head transverse, the face convex, polished, the orbits and lower part of face striated. Mandibles yellowish, the teeth black. Antennæ 12-jointed, filiform, brown-black, the scape pale toward the base; first funicular joint longer than the second, the third a little shorter than the second; the following a little longer than the third. Post-scutellar spine, small, acute. Angles of metathorax small but acute. Wings subhyaline, the nervures pale brown.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen. The striated abdomen and the relative length of the flagellar joints readily distinguish the species.

TELEAS Latreille.

Gen. Crust. et Ins., IV, p. 32 (1809).

(Type *T. clavicornis* Latr.)

Head transverse, the occiput margined; ocelli 3, rather close together in a triangle; eyes ovate.

Antennæ 12-jointed in both sexes, inserted on a clypeal prominence; in ♂ filiform, in ♀ ending in a 6-jointed club.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles falcate, bidentate at apex, the outer tooth long, acute.

Thorax short, ovoid, the prothorax not visible from above; mesonotum short, broader than long, without furrows; scutellum semicircular; post-scutellum spined; metathorax very short, the posterior angles rarely acutely toothed.

Front wings with a linear marginal vein, rarely five times as long as the short stigmal, postmarginal not developed.

Abdomen long-oval, depressed, inserted far above the hind coxæ, the first segment longer than wide, the third the longest and widest.

Legs slightly pilose, the posterior femora swollen, their tibiæ and first tarsal joint dilated, the tibial spurs distinct but short.

The swollen hind femora, their dilated tibiæ and tarsi, stronger tibial spurs, and the larger mandibles can be depended upon to distinguish the genus.

The species are rare and only a few have been described that really belong here.

TABLE OF SPECIES.

Winged.

All coxæ and legs pale brownish-yellow 2
All coxæ black, legs pale rufous or brownish-yellow.

Thorax and scutellum coarsely rugose.

Vertex transversely striated; three basal abdominal segments coarsely striated, the fourth basally with a fine, transverse, wavy sculpture; rim of scutellum yellow..... *T. LINEATICEPS*, sp. nov.

Vertex not striated, but slightly sculptured; three basal abdominal segments striated, the fourth and following, finely punctate at base; rim of scutellum black..... *T. COXALIS*, sp. nov.

Vertex smooth; first abdominal segment alone striate; the second and third, polished, but with a microscopic wavy sculpture.

T. MANDIBULARIS Ashm.

2. Vertex of head rugose but not striated; three basal segments striated.

T. PALLIDIPES, sp. nov.

***Teleas lineaticeps*, sp. nov.**

♂. Length, 2.80^{mm}. Black, pubescent; head transverse, the vertex and occiput transversely striated; the face, except a space at the middle, longitudinally striated. Antennæ 12-jointed, dark-brown, the scape pale at base; pedicel small, annular; first funicular joint four times as long as thick (antennæ broken beyond). Thorax and scutellum coarsely rugose or scabrous. Posterior rim of scutellum yellow. Post-scutellar spine large, triangular, oblique. Metapleura smooth, polished. Legs pale rufous or brownish-yellow, the coxæ black, the posterior femora swollen, dusky, their tibiæ dilated at tip with two distinct spurs; tarsi dilated, spinous. Wings fusco-hyaline, pubescent. Abdomen black, shining, as long as the head and thorax together, narrowed at base; the first three segments wholly longitudinally striated; the fourth, with a fine, transverse wavy sculpture; the first, at extreme base, yellowish.

HABITAT.—District of Columbia and Virginia.

Types in Coll. Ashmead.

The larger size of this species, longer first funicular joint of antennæ, coarser sculpture, yellow rim of scutellum, and stouter femora and tarsi, will at once separate it from the European *T. clavicornis* Latr., specimens of which are in my collection from France.

***Teleas coxalis*, sp. nov.**

♀. Length, 1.80 to 2^{mm}. Black, shining, pubescent; head transverse, polished, the vertex very slightly sculptured but not striated; lower part of face and the cheeks coarsely striate, the latter rounded; thorax coarsely, lineatedly rugose. Mandibles very large, rufous, the teeth stout, the outer the longer. Antennæ 12-jointed, black, reaching to the middle of the abdomen, the scape pale at base; first funicular joint long, twice as long as the scape; second, one-third shorter than first; third and fourth transverse. Post-scutellar spine large, triangular, oblique. Metapleura striated. Angles of metathorax produced into a tooth. Legs pale rufous, the coxæ black. Abdomen broadly oval, polished, the three basal segments striated, the third laterally smooth, the fourth and following segments very finely punctulate at base.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from two specimens.

Its smaller size, non-striated vertex, the lineated rugosities of the thorax, the length of the funicular joints, and the sculpture of the thorax sufficiently distinguish the species.

Teleas mandibularis Ashm.

Proscantha mandibularis Ashm., Ent. Am., III, p. 117.

♀. Length, 1.80^{mm}. Robust, black; thorax rugose and covered with a fuscous pubescence; cheeks flattened; lower part of head below the eyes striated, rest of the head smooth, polished. Mandibles long, curved, brownish yellow, the teeth black, the outer tooth very long, acute. Antennæ 12-jointed, very short, black, not reaching beyond the tegulæ, the scape pale at base; first funicular joint very little longer than the pedicel, the second slightly shorter; third and fourth minute, transverse; club scarcely longer than the funicle. Posterior rim of scutellum. black. Post-scutellar spine small. Wings fusco-hyaline, pubescent. Legs brownish-yellow, the coxæ black. Abdomen a little longer than the head and thorax together, smooth, shining, with a faint wavy-lined sculpture, the first segment alone striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

The short antennæ, relative length of the funicular joints, and the sculpture of abdomen can be depended upon to distinguish the species.

Teleas pallidipes, sp. nov.

(Pl. VIII, Fig. 5, ♂.)

♂. Length, 2.20^{mm}. Black, pubescent; head transverse, polished, the vertex almost smooth, the lower part of the face striate; thorax coarsely rugulose, the pronotum and pleura yellowish or rufous. Mandibles large, yellow. Clypeus yellow. Antennæ 12-jointed, very long, filiform, black, the scape and pedicel yellow; first funicular joint two thirds the length of scape; the second and third one-third shorter than the first, the latter emarginated at base; the joints after the fourth longer than the first. Post-scutellar spine large, triangular, horizontal. Wings subhyaline, pubescent. Legs wholly yellow. Abdomen oblong-oval, narrowed at base, black, shining, the three basal segments striated.

HABITAT.—New Jersey.

Type in Coll. Ashmead.

Described from a single specimen. It is difficult to tell whether this species is the opposite sex of either of the two females described above, but as the coxæ are pale, and the sculpture is different, I surmise it to be a distinct species.

HOPLOGRYON Ashm., gen. nov.

(Type *H. minutissimus* Ashm.)

Head transverse; cheeks above flattened, broader at base, face subconvex; vertex subacute; ocelli 3, triangularly arranged, the lateral

farther away from the margin of the eye than to the front ocellus; eyes ovate, villose.

Antennæ inserted on a tubercle just above the clypeus, 12-jointed in both sexes, in the ♀ terminating in a 6-jointed club, funicular joints 3 and 4 minute; in the ♂ long, filiform, the flagellar joints all cylindrical, the third not angulated.

Maxillary palpi 3-jointed.

Mandibles bifid, the teeth equal.

Thorax subovoid, the mesonotum without furrows, rarely with traces of furrows posteriorly; scutellum short, semicircular, with a punctate frenum; post-scutellum produced into a small spine; metathorax short, the angles obtuse or acutely produced.

Wings occasionally wanting; when present with the venation as in *Teleus*.

Abdomen broadly oval or oblong-oval, the first segment transverse, rarely as long as wide, striated, the third segment very large.

Legs as in *Gryon*.

Differs from *Prosacantha* Nees by the short transverse first abdominal segment, and by having the teeth in both mandibles equal; and from *Gryon* Hal. by having the postscutellum spined or tubercular.

TABLE OF SPECIES.

FEMALES.

- | | |
|---|--------------------------|
| Wingless species | 3 |
| Winged. | |
| Wings abbreviated, narrowed, when folded not reaching to the tip of the abdomen..... | 2 |
| Wings extending to or beyond the tip of the abdomen. | |
| Thorax and scutellum closely minutely punctulate. | |
| All coxæ black. | |
| Legs more or less fuscous or brown. | |
| Antennæ wholly black or brown black, except sometimes the scape at base. | |
| First and second abdominal segments striated. | |
| Third abdominal segment finely punctate.. | H. LONGIPENNIS, sp. nov. |
| Third abdominal segment polished, impunctate. | |
| Wings hyaline; hind femora and tibiæ fuscous, the tarsi pale. | |
| | H. MINUTISSIMUS Ashm. |
| Wings smoky; all tibiæ and tarsi fuscous, the femora pale. | |
| | H. TIBIALIS, sp. nov. |
| Coxæ and legs yellow. | |
| Wings hyaline; scutellum polished; third abdominal segment smooth, polished..... | H. CLARIPENNIS, sp. nov. |
| Wings subhyaline; scutellum punctate; third abdominal segment punctate..... | H. PTERIDIS, sp. nov. |
| 2. Coxæ and legs brownish-yellow. | |
| First and second abdominal segments striated, the first yellowish, the third smooth | H. BRACHYPTERUS Ashm. |

3. All coxæ black, or black basally.

Head and thorax minutely closely punctulate, the face striolated.

Legs fuscous; trochanters, knees, tips of tibiæ, and tarsi, yellow.

Scape not pale beneath; third abdominal segment and the venter smooth, shining, impunctured *H. OBSCURIPES*, sp. nov.

Legs rufous.

Scape pale beneath; third abdominal segment distinctly punctate, the venter faintly punctate *H. RUFIPES*, sp. nov.

MALES.

Wingless.

Thorax minutely rugose, punctate; vertex finely punctate, the face striolated.

Antennæ very long, filiform, black; legs, except coxæ, rufous.

H. SOLITARIUS, sp. nov.*Hoplogryon longipennis*, sp. nov.

(Pl. VIII, Fig. 6, ♀.)

♀. Length, 1^{mm}. Black, opaque, minutely, closely punctate, with a sericeous pubescence; cheeks flat and narrowed back of the upper part of the eye; the face shining, the lower portion and around the mouth, striated. Mandibles pale. Antennæ 12-jointed, black, the scape pale beneath toward base; first and second funicular joints almost equal, longer than the pedicel and very little longer than thick; third and fourth joints minute, transverse. Post-scutellar spine acute. Metathorax with acute angles. Legs fuscous or brown, the trochanters, knees, tips of tibiæ, and tarsi pale; coxæ black. Wings subhyaline, ciliated; when folded, longer than the abdomen. Abdomen broadly oval, narrowed at base; first segment a little wider than long; it, as well as the second, striated; third segment faintly microscopically punctate, but shining.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from 2 specimens received from Mr. W. H. Harrington.

Hoplogryon minutissimus, Ashm.*Proscantha minutissima* Ashm., Ent. Am., III, p. 117, ♀.

♀. Length, 0.75^{mm}. Black, subopaque, closely, microscopically punctate; face smooth, shining, with some striæ only between the eye and the mandibles. Mandibles brownish. Antennæ 12-jointed, black; the first and second funicular joints subequal, a little longer than thick; third and fourth, minute, transverse. Post-scutellar spine small, but acute. Angles of metathorax not acute. Legs brown or fuscous, the trochanters, knees, tips of tibiæ, and the tarsi pale; coxæ black. Wings subhyaline, fringed; when folded scarcely extending beyond the tip of the abdomen. Abdomen broadly oval, polished, impunctured, the first and second segments striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Allied to *H. longipennis*, but smaller, more shining, the punctuation finer, the wings shorter, the angles of the metathorax not acutely toothed, while the abdomen, except the first two segments, is impunctured, the first segment being much wider than long.

***Hoplogryon tibialis*, sp. nov.**

♀. Length, 1.20^{mm}. Black, subopaque, very closely, minutely punctate; face smooth, polished, with some faint striæ on either side the antennæ. Mandibles pale rufous, the teeth black. Antennæ 12-jointed, black; first and second joints about equal, fully twice as long as thick; third and fourth minute, transverse. Post-scutellar spine acute. Angles of metathorax acute. Legs yellow, the coxæ black, while all the tibiæ and tarsi are fuscous. Wings smoky, with short cilia. Abdomen oval, much narrowed at base, highly polished, black; the first segment, and the second at base and at the middle, striated; the first segment is as long as wide.

HABITAT.—Virginia.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. O. Heidemann.

This species is quite distinct from the others by the length of the first and second funicular joints, smoky wings, and the color of the legs.

***Hoplogryon claripennis*, sp. nov.**

♀. Length, 1.20^{mm}. Black, shining; head transverse, polished, with some faint striæ below the eyes; thorax faintly punctulate, the scutellum polished, impunctured; mandibles piceous. Antennæ 12-jointed, black; the scape at base and the pedicel at tip, pale; first and second funicular joints nearly equal, the first more than twice as long as thick; third and fourth small, subquadrate. Post-scutellar spine, oblique, acute. Metathoracic angles produced into acute spines. Legs, including coxæ, brownish-yellow. Wings hyaline, scarcely tinged. Abdomen oblong oval, narrowed at base and highly polished, the first and second segments coarsely striated, the first nearly as long as wide.

HABITAT.—Virginia.

Type in Coll. Ashmead.

This pretty species was given to me by my friend Mr. O. Heidemann. Its shining surface, less distinctly punctured thorax, highly polished scutellum, and the length of the funicular joints readily distinguish it.

***Hoplogryon pteridia*, sp. nov.**

♀. Length, 0.80^{mm}. Black, subopaque, closely microscopically punctulate; face smooth, polished; mandibles yellowish. Antennæ 12-jointed, black; first and second funicular joints equal, scarcely longer than thick and very little longer than the pedicel; third and fourth minute, transverse. Post-scutellar spine distinct, acute. Angles of

metathorax subacute. Legs, including the coxæ, yellow, the posterior pair slightly dusky at base. Wings subhyaline, when folded, not or scarcely longer than the abdomen and somewhat narrowed. Abdomen rotund, oval, polished, widened from the base of the first segment; first and second segment at base striated, the first, twice as wide as long.

HABITAT.—Fortress Monroe, Va., and District of Columbia.

Types in Coll. Ashmead.

This species was taken by Mr. E. A. Schwarz, at Fortress Monroe. The color of the legs and the shape of the abdomen and wings, readily separate the species from all the others.

***Hoplogryon brachypterus* Ashm.**

Prosacantha brachyptera Ashm., Can. Ent., xx, p. 50.

♀. Length, 0.75 to 0.80^{mm}. Black, subopaque, closely microscopically punctulate; the head polished, shining, the face having a delicate central line below the front ocellus; mandibles pale; legs brownish-yellow, reddish, brownish or fuscous, with the distal ends of femora and tibiæ and the tarsi, yellow or pale. Antennæ 12-jointed, black or brown-black; first and second funicular joints subequal, a little longer than thick; third and fourth, very minute. Post-scutellar spine minute. Angles of metathorax not toothed. Wings subhyaline, much narrowed and shortened, when folded reaching scarcely beyond the middle of the abdomen, pubescent, but not distinctly fringed. Abdomen broadly oval, highly polished, black, the first segment wider than long, yellowish and striated.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

For several specimens of this highly interesting species, I am indebted to Mr. W. H. Harrington. The abbreviated, narrowed, non-ciliated wings and the yellow petiole distinguish the species.

***Hoplogryon obscuripes*, sp. nov.**

♀. Length, 0.80^{mm}. Black, opaque, closely, minutely punctulate, covered with a fine sericeous pubescence; the face shining, striolated. Mandibles pale brown. Antennæ 12-jointed, brown-black; first and second funicular joints subequal, the first about one and a half times as long as thick; third and fourth minute, transverse. Post-scutellar spine minute but acute. Metathoracic angles obtuse. Wings entirely wanting. Legs fuscous, the coxæ black or dusky basally, the trochanters, knees, tips of tibiæ, and tarsi, yellowish. Abdomen oval, polished, the first segment transverse, twice as wide as long, striated, the second striated only at the basal suture, the venter impunctate.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from two specimens received from Mr. W. H. Harrington.

Hoplogryon rufipes, sp. nov.

♀. Length, 0.80^{mm}. Black, subopaque, microscopically punctulate, the face striolate. Mandibles pale. Antennæ 12-jointed, black, the scape pale beneath; first and second funicular joints equal, 1½ times as long as thick; third and fourth minute, transverse. Post-scutellar spine minute, triangular. Angles of metathorax acute. Wings wanting. Legs rufous, the tarsi yellowish. Abdomen broadly oval, shining, the first and second segments transverse, longitudinally striated; the third and the venter microscopically punctate.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen collected by Mr. E. A. Schwarz. The color of the legs and the fine punctation of the third dorsal segment and the venter distinguish the species.

Hoplogryon solitarius, sp. nov.

♂. Length, 1.5^{mm}. Black, subopaque, closely, minutely punctulate; head wide, 3½ times as wide as thick antero-posteriorly, the cheeks rounded, margined behind, the face smooth, the orbits and around the mouth striated. Mandibles rufous. Antennæ 12-jointed, filiform, much longer than the body, black, the scape pale basally; first flagellar joint about half the length of the scape; second, very slightly longer than the first; third to the penultimate, nearly of an equal length, but slightly shorter than the first; last joint slightly longer. Scutellum smoother than the thorax, shining. Post-scutellar spine acute. Angles of metathorax acutely toothed. Wings wanting. Legs, except coxæ, uniformly rufous. Abdomen oblong-oval, polished, very little longer than the head and thorax united, the first segment transverse, much broader than long, the second a little longer than the first, both coarsely striated.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. H. Harrington.

On account of the very large size of this species, in comparison with the described wingless females, it is scarcely probable that it can be the opposite sex of any of them.

GRYON Haliday.

Ent. Mag., I, p. 271 (1833); Först. Hym. Stud., II, p. 101 (1856).

(Type *G. miscellus* Hal.)

Head large, transverse, the occiput scarcely emarginated; ocelli 3, triangularly arranged, close together on vertex; eyes ovate, villose.

Antennæ 12-jointed in both sexes; in ♀ clavate, the club large, 6-jointed, the last two funicular joints minute; in ♂ filiform.

Maxillary palpi 3-jointed.

Mandibles bifid, the teeth equal.

Thorax short, subovoid, the prothorax not at all visible from above; the mesonotum more than twice as wide as long, without furrows; scutellum short, transverse; postscutellum not spined, simple; metathorax very short, the angles subacute or acute.

Wings most frequently wanting, when present with the venation as in *Teleas*, the marginal vein rarely more than 4 times as long as the stigmal.

Abdomen broadly oval, the first and second segments short, transverse, of nearly an equal length, usually striated, the third very large, but broader than long.

Legs as in *Prosacantha*, the tibial spurs weak, the basal joint of hind tarsi a little more than thrice as long as the second.

Closely allied to *Prosacantha* and *Hoplogryon*, but separated from both by the simple, *not spined*, postscutellum.

Dr. Förster's description of this genus in the Hym. Stud. is scarcely correct and very misleading. I have recognized the genus by Walker's figure of the male in Ent. Mag., Vol. III, Pl. XIII, Fig. 5, which plainly shows its relation to *Prosacantha*, but is distinct in having the postscutellum simple, not spined, and the basal abdominal segment much broader than long, not petioliform.

TABLE OF SPECIES.

FEMALES.

- Wingless species 2
 Winged.
- Head and thorax finely punctulate; metathoracic angles obtuse.
 Mesonotum with traces of furrows posteriorly.
 Coxæ and legs yellow *G. FUMIPENNIS*, sp. nov.
2. Head and thorax finely, closely punctulate, subopaque, the lower part of face with striæ converging toward the mouth.
 All coxæ black; first and second abdominal segments striated.
 Metathoracic angles obtuse or subacute.
 Legs pale rufous or brownish-yellow; abdomen shining, but microscopically punctate *G. BOREALIS* Ashm.
 Legs fuscous, the trochanters, knees, and tarsi yellow; abdomen polished, impunctate *G. CANADENSIS* Ashm.
 Metathoracic angles acute.
 Legs brownish-yellow; abdomen, above and beneath, punctate, subopaque. *G. COLUMBIANUS*, sp. nov.
- All coxæ pale; metathoracic angles obtuse.
 Legs pale yellow; abdomen smooth shining *G. FLAVIPES*, sp. nov.

Gryon fumipennis, sp. nov.

♀. Length, 1.40^{mm}. Black, shining, minutely punctulate; face smooth, polished, with faint striæ at the mouth; mandibles and legs

yellow. Antennæ 12-jointed, black, the scape yellowish toward the base; first two funicular joints equal, about twice as long as the pedicel; third and fourth, minute, transverse. Mesonotum with traces of the parapsidal furrows posteriorly. Scutellum smoother than the mesonotum, but still slightly punctate. Metathorax laterally above and the metapleura polished, the angles obtuse. Wings smoky-hyaline, paler at base. Abdomen oval, smooth, polished, the first and second segments striated.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from one specimen received from Mr. E. A. Schwarz.

Gryon borealis Ashm.

(Pl. VIII, Fig. 7, ♀.)

Acolus borealis Ashm., Can. Ent., xx, p. 50.

♀. Length, 1^{mm}. Apterous; black, subopaque, closely microscopically punctate and with a fine sericeous pubescence; lower part of face striated. Mandibles pale. Metathorax with the angles subacute. Antennæ 12-jointed, black or brown-black; first funicular joint longer and thicker than the pedicel; second one-third shorter than the first; third and fourth minute, transverse. Legs pale rufous or brownish-yellow, the coxæ black. Abdomen oval, microscopically punctate, but shining, the first and second segments striated.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from four specimens received from Mr. W. H. Harrington.

Gryon canadensis Ashm.

Acolus canadensis Ashm., Can. Ent., xx, p. 50.

♀. Length, 0.60^{mm}. Apterous; black, subopaque, closely, minutely punctulate and pubescent; face polished, with striæ at base. Mandibles pale rufous. Antennæ 12-jointed, black, the scape pale at base; first and second funicular joints very little longer than thick, the second slightly the smaller; third and fourth minute, transverse; club very large, the joints close set, transverse. Scutellum small, sublunate, shining. Metathorax short, narrowed posteriorly, the angles not at all prominent. Legs fuscous, the trochanters, knees, and tarsi, honey-yellow. Abdomen rotund-oval, smooth, shining, impunctate, the first and second segment very short, transverse, striolate, the second with a fringe of glittering hairs at apex.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from four specimens received from Mr. W. H. Harrington. Allied to *G. borealis*, but smaller, the legs differently colored, the metathoracic angles not at all prominent, while the abdomen is polished, impunctate.

Gryon columbianus, sp. nov.

♀. Length, 1.40^{mm}. Subrobust, black, opaque, closely, minutely punctulate; head transverse, wider than thorax, the anterior orbits, broadly, and the cheeks, striated; mandibles pale rufous; scape and legs, except coxæ, brownish-yellow or pale rufous; flagellum brown-black. Antennæ 12-jointed, not quite as long as the body; first and second funicular joints about equal, twice as long as the pedicel; third and fourth minute, annular; club a little longer than the pedicel and funicle united, rather stout, the joints transverse-quadrate. Angles of metathorax acute; post-scutellar ridge emarginated at the middle. Abdomen broadly oval, closely punctate, subopaque, sericeous, the first and second segments with coarse striae, the apical margin of the second smooth, polished; first and second ventral segments striated, the third and following punctate.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Described from several specimens.

Gryon flavipes, sp. nov.

♀. Length, 0.60^{mm}. Black, shining, finely punctulate; face smooth, polished; legs pale yellow; metathorax with obtuse angles. Antennæ 12-jointed, brown-black, the scape, beneath, toward base, pale; first funicular joint a little longer than the pedicel; second shorter than the first, not longer than thick; third and fourth, minute, transverse. Abdomen rotund-oval, smooth, shining, the first segment and the second at the suture, striated; venter piceous.

HABITAT —Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. H. Harrington. Differs from the other species in the smoothness of the face, paler legs, smoothness and sculpture of the abdomen, and the color of the venter.

Tribe IV.—SCELIONINI.

A tribe allied to the *Telesini* and always with the abdomen distinctly carinated along the sides; but, except in a few genera, the abdomen is much more elongated, being pointed or fusiform, rarely oval, and extends beyond the tips of the wings when folded, the third segment the longest, or the second and third are about equal in length. The venation, however, is quite distinct; the postmarginal nervure, except in a few cases, is fully developed and usually longer than the marginal, while the stigmal is never very short. When the postmarginal nervure is absent the submarginal terminates in a stigma (*Baoneura* and *Scelio*).

The parasitism of many of the genera is known, all being parasites in the eggs of various insects, but principally in those belonging to the Orthoptera and Hemiptera. *Baryconus* and *Cacus* attack the eggs of the White Tree-crickets, *Oecanthus niveus*, etc.; *Macroteleia*, those of *Orchelimum*; *Scelio*, various Locusts or Grasshoppers, *Dissosteira*, *Caloptenus* and *Acridium*; while *Hadronotus*, a genus easily mistaken for *Telenomus*, is parasitic on different Heteroptera-Hemiptera, belonging to the families Coreidæ, Pyrrhocoridæ and Reduviidæ.

It is believed the genera can be readily separated by the aid of the following table:

TABLE OF GENERA.

FEMALES.

- Postmarginal vein wanting or never greatly developed, always shorter than the stigmal vein, the submarginal vein often never reaching the costa and terminating in a large stigma, the abdomen long, fusiform....4
- Postmarginal vein always greatly lengthened, the submarginal never terminating in a stigma.
- Basal vein wanting.....3
- Basal vein present.
- First abdominal segment without a horn at base.....2
- First abdominal segment with a horn at base.
- Marginal vein short; abdomen long, pointed, fusiform, the first segment narrow, petioliform, the second and third segments nearly equal.
-CALOTELEIA Westw.
- Marginal vein long; abdomen long, linear or subfusiform, the first segment quadrate or subquadrate.....BARYCONUS Först.
2. Abdomen long, pointed fusiform or linear, segments 2, 3, and 4 nearly equal.
- Mesonotum with 2 furrows.
- Metascutellum without a spine.
- Metanotum with no inclosed space at base.
- Marginal vein about twice the length of the stigmal.
- Mandibles 3-dentate.....MACROTELEIA Westw.
- Mandibles 2-dentate.....CALLISCHELIO, gen. nov.
- Marginal vein very short.
- Metanotum with a large, semicircular inclosed space at base.
- Marginal vein punctiform.....CHROMOTELEIA, gen. nov.
- Abdomen oblong-oval or fusiform, but not especially lengthened.
- Metascutellum spined.
- Mesonotum with 2 furrows.
- Mandibles 2-dentate; abdominal segments 1 and 2 equal in length, the 3d longer.....OPISTHACANTHA, gen. nov.
- Mesonotum without furrows.
- Mandibles 2-dentate; abdominal segments 1 and 2 equal in length, the 3d longer.....(OPISTHACANTHA).
- Mandibles 3-dentate; segments 2 and 3 equal in length, the 1st shorter.
-LAPITHA, gen. nov.
- Metascutellum not spined, simple.
- Marginal vein short, or not more than half the length of the stigmal, most frequently punctiform.
- Mesonotum without furrows.
- Head quadrate, mandibles 3-dentate.....CACUS Riley.

Marginal vein longer than the stigmal.

Mandibles 3-dentate.

First flagellar joint scarcely longer than the third, the third excised
MACROTELEIA Westw.

First flagellar joint much longer than the third.

BARYCONUS Förster.

Metascutellum spined.....OPISTHACANTHA Ashm., gen. nov.

Metathorax with a large semicircular inclosed space at base.

Marginal vein punctiform; mandibles 3-dentate.

CHROMOTELEIA, gen. nov.

3. Metascutellum not spined.

Marginal vein punctiform or never as long as the stigmal.

Mandibles 3-dentate.

First flagellar joint very long.....CALOTELEIA Westw.

First flagellar joint shorter than second.....CACUS Riley.

Marginal vein long, always longer than the stigmal.

Mandibles 3-dentate.....BARYCONUS Förster.

Metascutellum spined.

Marginal vein longer than the stigmal; mandibles 3-dentate..LAPITHA, gen. nov.

Marginal vein shorter than the stigmal; mandibles 2-dentate.

OPISTHACANTHA Ashm., gen. nov.

4. Mesonotum with three distinct furrows.

Metascutellum armed with 2 teeth; tip of abdomen ending in two short prongs.
HOPLOTELEIA Ashm., gen. nov.

Mesonotum with two furrows.

Metathorax unarmed; mandibles 3-dentate.....(MACROTELEIA).

Metathorax with 2 small teeth; mandibles 2-dentate.....(CACUS Riley).

Mesonotum without furrows.

Metascutellum with a small acute spine.....OPISTHACANTHA Ashm., gen. nov.

Metascutellum simple.

Metanotum with 2 small teeth at apex.

Mandibles 2-dentate.....CACUS.

Metanotum unarmed, simple.

Abdominal segments strongly constricted.

Antennæ subclavate.....CREMASTOBÆUS, gen. nov.

Abdominal segments normal.

Antennæ filiform, submoniliform.....HADRONOTUS Förster.

5. Submarginal vein not reaching the costa, knobbed.....BÆONEURA Först.

Submarginal vein reaching the costa.

Submarginal vein not terminating in a stigma.

Marginal vein very short, the postmarginal scarcely developed or shorter than the stigmal.

Mesonotum with 2 furrows.....IDRIS Förster.

Submarginal vein terminating in a thickened stigma.

Head without a frontal ledge or lamina; postmarginal vein not developed. 6

Head with a frontal lamina or ledge.

Scutellum quadrate, the angles acute; the postscutellum spined.

ACANTHOSCELIO, gen. nov.

Scutellum and postscutellum normal.....SPARASION Jurine.

6. Mesonotum with 2 furrows.

Maxillary palpi long, 5-jointed; antennæ long, setaceous, 12-jointed.

SCELIOMORPHA, gen. nov.

Mesonotum without furrows, or rarely distinct.

Maxillary palpi short, 3-jointed; antennæ short, fusiform, 10-jointed.

SCELIO Latreille.

CALOTHELEIA Westwood.

Trans. Lond. Ent. Soc., II, p. 55, Pl. 7, f. 10.

(Type *C. aurantia* Westw.)

Head transverse, subquadrate, the frons convex, the occiput roundly emarginated; ocelli 3 in a triangle, the lateral close to the eye; eyes large, oval, bare or faintly pubescent.

Antennæ inserted just above the clypeus, 12-jointed in both sexes; in ♀ clavate, the club 5- or 6-jointed, the last two funicular joints usually transverse or quadrate; in ♂ filiform, long; the flagellar joints long, cylindrical.

Mandibles 3-dentate.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Thorax ovate, the prothorax scarcely visible from above, except at the lateral corners; mesonotum usually entirely without furrows, although occasionally with 2 distinct furrows; scutellum semicircular; metathorax emarginate and carinated along the sides.

Front wings with the marginal vein short, punctiform or rarely half the length of the stigmal; the stigmal vein oblique, and usually ending in a little knob; postmarginal vein very long, basal vein distinct, rarely entirely absent.

Abdomen long, fusiform, pointed at tip and narrowed at base; the basal segment in the ♀ with a horn extended forward over the metathorax.

Legs rather long, the femora and tibiæ subclavate; the tibial spurs 1, 1, 1, the middle and hind pairs rather weak; tarsi long, the basal joint several times longer than the second; claws simple.

This genus was originally described by Prof. Westwood, from a single specimen found embedded in Gum animé, in the collection of Rev. F. W. Hope. The genus is not rare in South America and the West Indies, and five species have been discovered in our fauna.

It is closely allied to *Baryconus* Förster; but the marginal nervure is usually punctiform, or at least very short, and the petiole is longer and more slender.

TABLE OF SPECIES.

Body pale.....	2
Body black.	
Coxæ black, legs rufous or brownish-yellow.	
Three basal abdominal segments longitudinally striated, the following smooth, polished	<i>C. STRIATA</i> , sp. nov.
Two basal abdominal segments striated; first and second funicular joints very long, slender; third and fourth stouter, the third longer than thick; the fourth quadrate.....	<i>C. HEIDEMANNII</i> , sp. nov.
2. Brownish-yellow.	
Head pale, concolorous with the rest of the body.	
Abdomen banded with black or fuscous.....	<i>C. CINCTIVENTRIS</i> Ashm.
Abdomen not banded; apex of horn and tip of abdomen black or fuscous.	
	<i>C. RUBRICLAVA</i> Ashm.
Head black or fuscous	<i>C. MARLATTII</i> , sp. nov.

Caloteleia striata, sp. nov.

♀. Length, 2.6^{mm}. Black, lustrous, rather closely punctate; head quadrate, with a polished, impunctate spot on the frons. Antennæ 12-jointed, brown, the base and tip of scape and the tip of pedicel, yellowish; pedicel rather long; first funicular joint slightly longer and slenderer than the pedicel; second, about half the length of the first and a little stouter; third and fourth, transverse; club 6-jointed, all the joints transverse. Thorax without furrows. Legs rufous, the coxæ black. Wings hyaline, the venation brown; there is a distinct basal vein; the marginal is very short, about one-third the length of the stigmal, while the stigmal ends in a small knob, the postmarginal being very long. Abdomen long, pointed, fusiform, about thrice the length of the thorax, the basal segment with a distinct blunt horn at base, and it as well as the second and third segments are distinctly longitudinally striated; all the following segments are smooth, shining.

HABITAT.—Washington, D. C.

Type in National Museum.

Described from a single specimen.

Caloteleia Heidemannii, sp. nov.

(Pl. ix, Fig. 1, ♀.)

♀. Length, 2.4^{mm}. Elongate, slender, black, shining, punctate; head subquadrate; mandibles and palpi yellow; legs rufous, the trochanters, knees, tips of tibiæ and tarsi yellow, the coxæ black, shining, impunctured. Antennæ 12-jointed, piceous, the tips of the scape, pedicel, and funicular joints yellow, the club black; pedicel and first funicular joint very long, nearly of an equal length, the latter the slenderer; second funicular joint one-third shorter than the first; third and fourth stouter, the third longer than thick, the fourth quadrate; club a little thicker than last two funicular joints, long, cylindrical, the joints subquadrate. Mesonotum without furrows. Mesopleura with a deep femoral groove, pubescent, sparsely punctate. Wings subhyaline, the marginal vein short, scarcely one-third the length of the rather long stigmal vein; basal nervure distinct. Abdomen long, pointed, fusiform, black, shining, the first and second segments striated, the following smooth, polished, impunctured.

HABITAT.—Virginia.

Type in Coll. Ashmead.

Described from a single specimen collected by O. Heidemann. Allied to *C. striata*, but quite distinct by the shape of the head, relative length of funicular joints, and the sculpture of the abdomen.

Caloteleia cinctiventris Ashm.

Dacnusa cinctiventris Ashm., Ent. Am., III, p. 99, ♀; Cress. Syn. Hym., p. 313.

♀. Length, 1.80^{mm}. Brownish-yellow, closely, minutely punctate; abdominal segments at base barred with black or fuscous; legs pale;

the femora and tibiae very slightly obfuscated. Head transverse, with a fuscous spot on vertex. Antennae 12-jointed, the scape and funicle pale brown, the club black; first funicular joint slightly shorter than the pedicel, or a little longer than thick; second, shorter; third and fourth minute, transverse; club fusiform, the joints short, transverse. Wings hyaline, with a band below the punctiform marginal vein. Abdomen long, fusiform, minutely punctate; the short horn on first segment black, shining; base of the following segments black or fuscous.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

This pretty little species is quite distinct from all the others, in size, in the banded anterior wings, and in the banded abdomen. It was originally described in the genus *Baoneura* on account of the punctiform marginal vein.

Caloteleia rubriclava Ashm.

Acolus rubriclarius Ashm., Ent. Am. III, p. 99; Cress. Syn. Hym., p. 313.

♀. Length, 3^{mm}. Pale brownish-yellow; the short horn at base of abdomen black; eyes and ocelli brown. Antennae 12-jointed, pale; the club large, subsolid, inarticulated, reddish-brown; first funicular joint shorter than the pedicel; the three following very short. Mesonotum closely, minutely punctulate, with 2 delicate furrows. Wings hyaline, the marginal vein very short. Abdomen long, pointed-fusiform, the first three segments longitudinally striated, the third apically, and the following, smooth, shining.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

This species is quite distinct from the others in color, and in having a subsolid club.

Caloteleia Marlattii, sp. nov.

♂ ♀. Length, 2.8 to 3.2^{mm}. Brownish-yellow, closely, minutely punctulate; the head black or fuscous, the lower part of cheeks and face often pale, especially in the female; the first and apical abdominal segments in the male black or fuscous.

Antennae 12-jointed, brown-black; in ♂ filiform with the scape pale, the first funicular joint a little longer and thicker than the pedicel, the second a little shorter than the third, and both shorter than the first, the joints beyond oval-moniliform, loosely joined; in ♀ terminating in a large 6-jointed club, the second funicular joint about half the length of the first, the third and fourth subquadrate.

Mesonotum with 2 delicate furrows, punctate. Wings hyaline, pubescent, the marginal vein slightly thickened, short; the stigmal vein short and ending in a knob.

Abdomen long, fusiform, much narrowed at base, the first segment

being long, petioliform, linear, the three basal segments longitudinally striated, the striations on the third fainter than on the other two, smooth laterally and at apex; rest of the abdomen smooth.

HABITAT.—Kansas, Illinois, and New Jersey.

Type in Coll. Ashmead and National Museum.

BARYCONUS Förster.

Hym. Stud., II, p. 101 (1856).

Head subquadrate or quadrate, roundedly emarginated posteriorly; ocelli 3 in a triangle, the lateral very close to the eye; eyes large, oval, pubescent.

Antennæ inserted just above the clypeus, 12-jointed in both sexes, in ♀ terminating in a 6-jointed club, the last funicular joint transverse; in ♂ long, filiform, the first flagellar joint longer than the third.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles tridentate.

Thorax ovoid, the prothorax not or scarcely visible from above; mesothorax with or without furrows; metathorax short, emarginate posteriorly, with delicate keels laterally.

Front wings with a long marginal and a very long postmarginal vein, the marginal being usually twice as long as the stigmal, oblique, clavate, sometimes a little curved; basal vein usually distinct, rarely subobsolete.

Abdomen long, linear, or fusiform, and not so much narrowed at base as in *Caloteleia*, the basal segments in ♀ with a horn at base extending forward over the metathorax, sometimes reduced to an elevated convex prominence.

Legs long, the femora and tibiæ subclavate; the tibial spurs 1,1,1; all tarsi slender, much longer than their tibiæ.

Förster's type of the genus appears never to have been described. The genus is closely allied to *Caloteleia*, but is readily separated by the longer marginal vein and the difference pointed out in the abdomen. It is parasitic on the eggs of white tree crickets, *Oecanthus*.

Baryconus oecanthi, sp. nov. Riley.

(Pl. IX, Fig. 2 ♀.)

“ ♂ ♀. Length, 2.5 to 3^{mm}. Black, closely punctate, subopaque and sparsely covered with a sericeous down. Head quadrate; eyes pubescent; antennæ 12-jointed, black; in ♂ filiform-submoniliform, the first and second funicular joints elongate, about equal, thrice as long as thick; third slightly shorter; fourth half the length of third; joints beyond to the last, moniliform; the last fusiform, twice the length of the penultimate; in ♀ terminating in a long 6-jointed club.

"Thorax punctate, without furrows; legs black, the base of the tibiae and tarsi brownish; wings hyaline, pubescent, the venation brown, the marginal vein longer than the stigmal, the latter ending in a small knob. Abdomen twice as long as the head and thorax together, linear-fusiform, lineately rugulose, the apex of the horn in the female polished.

"HABITAT.—Lincoln, Nebr.

"Type in National Museum.

"This species was reared by Prof. L. Bruner from the eggs of *Oecanthus niveus*, and probably is the insect that Mr. Howard Ayers treats under the genus *Teleas* in his biological study published in Memoirs Bost. Soc. N. H., vol. III, p. 225, 1884."—[From Riley's MS.]

MACROTELEIA Westwood.

Proc. Zool. Soc., 1835, p. 70.

(Type *M. cleonymoides* Westw.)

Head transverse, subquadrate, broader than the thorax, the frons convex, the occiput slightly emarginate; ocelli 3 in a triangle, the lateral touching the eye; eyes oval, bare.

Antennae inserted just above the clypeus, 12-jointed in both sexes, in ♀ clavate, the club large, 6-jointed; in ♂ long, filiform, the first flagellar joint scarcely longer than the third, the third excised.

Maxillary palpi short, 4-jointed; labial palpi 3-jointed.

Mandibles tridentate.

Thorax ovate, the prothorax slightly visible from above; mesothorax with or without furrows; scutellum semicircular; metathorax not very short with two carinae above, diverging posteriorly, and with delicate lateral carinae.

Front wings with a long marginal vein nearly twice the length of the stigmal, the postmarginal greatly lengthened, the stigmal vein oblique, usually with a little knob and sometimes with a radial branch from its tip; basal vein sometimes present, usually obsolete.

Abdomen sessile, greatly elongated, fusiform or linear, projecting beyond the tip of the wings when folded, the first four segments nearly equal.

Legs as in *Baryconus*, the tibial spurs 1, 1, 1, distinct, the basal joint of hind tarsi less than thrice as long as the second.

Distinguished by the long marginal nervure and the greatly elongate, fusiform abdomen. Species occur with and without parapsidal furrows, and with and without a basal nervure, and these characters can be used to separate the genus into sections. If the species become numerous they might be entitled to generic value. The genus is parasitic on the eggs of the locustid genus *Orchelimum*.

TABLE OF SPECIES.

FEMALES.

Abdomen more than five times as long as the head and thorax united, the three basal segments coarsely lineately sculptured, the rest more finely striated and punctate; scape and legs yellow,

M. MACROGASTER, sp. nov.

Abdomen scarcely thrice as long as the head and thorax united.

Coxæ black; abdomen with a lineated sculpture basally, the apical segments almost smooth but still faintly punctate... *M. FLORIDANA* Ashm.

Coxæ pale; abdomen with a thimble-like punctation... *M. VIRGINIENSIS*, sp. nov.

Macroteleia macrogaster, sp. nov.

(Pl. IX, Fig. 6, ♂.)

♂ ♀. Length, ♀, 8^{mm}; ♂, 4.60^{mm}. Brown-black, pubescent, with round punctures; six basal joints of ♀ antennæ and legs, except coxæ, brownish-yellow; the pedicel and the first funicular joint very long, the latter the longer; second funicular joint one-half the length of the first; third and fourth, short, subequal; club rather slender, the joints, except the last, a little wider than long; the ♂ antennæ are filiform; the pedicel greatly elongate, as long as the first and second funicular joints together, the joints beyond a little more than twice as long as thick. Mesonotum with 2 furrows. Scutellum short, transverse, with a row of punctures behind. Metanotum very short, the abdomen being inserted just back of the post-scutellum on a line before the insertion of hind coxæ. The abdomen in both sexes is very long, in the ♀ measuring 5^{mm} in length and more than twice the length of the wings when folded, with coarse, rounded punctures and little raised lineations; after the third segment the punctures are smaller and the surface is smoother. Wings fusco-hyaline, the marginal vein about 1½ times as long as the stigmal, the latter ending in a small knob, the postmarginal very long.

HABITAT.—Texas.

Types in Coll. Ashmead.

Described from 1 ♂, 1 ♀ specimen.

Macroteleia floridana Ashm.

(Pl. IX, Fig. 6, ♀.)

Bæoneura floridana Ashm., Ent. Am.; III, p. 99; Cress. Syn. Hym., p. 313.

♂ ♀. Length, 3.5 to 4^{mm}. Slender, greatly elongated, black, rugoso-punctate, and sparsely pubescent. Antennæ dark-brown, the scape pale; first funicular joint in ♀ longer than the pedicel, the second slightly smaller, the third still shorter, the fourth wider; club 6-jointed, large. In ♂ the pedicel and first funicular joint about equal, the second short, the third a little dilated, slightly emarginated at base, the following submoniliform, slightly longer than thick. Mesonotum with 2 distinct furrows, the metanotum with 2 delicate keels on disk, sometimes with a tuft of pubescence between. Wings hyaline, very slightly

tinged, pubescent; marginal vein about twice as long as the stigmal, the postmarginal very long. Legs brownish-yellow; in ♀ with the coxæ black. Abdomen, in ♀, long fusiform, in ♂ long, linear, scarcely widened at the middle, extending far beyond the wings when folded, and about thrice as long as the thorax; first and second segments striated and punctate, the following segments punctate and faintly rugose.

HABITAT.—Florida; Virginia.

Types in Coll. Ashmead.

Macroteleia virginensis, sp. nov.

♀. Length, 4^{mm}. Black, shining, with thimble-like punctation; head transverse-quadrate; eyes very large, rounded, pubescent. Antennæ 12-jointed, clavate, brown-black, the scape brownish-yellow; first funicular joint long, one-third longer than the pedicel, the second two-thirds the length of the first, the third and fourth subequal, but still longer than wide; club 6-jointed, gradually thickened from the fourth funicular joint, long, gradually tapering off at both ends.

Mesonotum with two distinct furrows. Scutellum smoother, sparsely punctate. Metathorax with a median keel. Wings hyaline, the marginal vein twice the length of the stigmal, the latter rather short, ending in a knob; basal nervure wanting. Legs, including coxæ, reddish-yellow. Abdomen pointed, fusiform, about twice as long as the head and thorax united, with close, thimble-like punctures, some of which are elongated and with raised lines, the first segment striolated, the suture between the first and second crenate; the first and second segments are about equal in length, a little shorter than the third and fourth, which are also equal.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Since this description was drawn up specimens of this species were reared by Dr. Riley, in the Department of Agriculture, from the eggs of *Orchelimum glaberrimum*.

CALLISCELIO Ashm., gen. nov.

(Type, *C. laticinctus*.)

Head transverse, the frons convex, the face not impressed, occiput and cheeks delicately margined; ocelli 3, large, in a triangle, the lateral touching the eye; eyes very large, oval, bare.

Antennæ inserted at the clypeus, 12-jointed in both sexes, in ♀ with a 6-jointed club, all the funicular joints elongate; in ♂ filiform, the first flagellar joint long, joints 4 to 10 submoniliform.

Mandibles bidentate.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Thorax ovate, rounded before, the prothorax slightly visible from above, the mesonotum with two distinct furrows, scutellum semicircular, convex; metathorax short, carinated laterally.

Front wings with a distinct basal nervure, the marginal vein long, fully twice as long as the stigmal, the latter oblique, knobbed at tip, basal vein distinct.

Abdomen pointed fusiform, much narrowed at base, the tip projecting a little beyond the wings when folded, first segment linear, petioliform, not quite as long as the second, which is the longest segment; third segment two-thirds the length of the second; the fourth a little more than half as long as the third; fifth subequal with fourth; sixth conical, about as long as the third.

Legs long, slender, the tibial spurs 1, 1, 1, weak, the basal joint of hind tarsi nearly four times as long as the second.

Allied to *Macroteleia*, but separated by the bidentate mandibles, more transverse head, and narrower petiole.

Calliscelio laticinctus, sp. nov.

(Pl. ix, Fig. 7, ♀.)

♀. Length, 2.5^{mm}. Head black; face, clypeus, mandibles, and palpi, pale; thorax rufous or brown, the metathorax black; legs yellowish, posterior coxæ and femora obfuscated above; abdomen fusiform, much longer than the head and thorax together, piceous-brown, the basal one-third of second segment, and basal one-half of third, yellow; petiole, the apical two-thirds of second, and the three apical segments black; the petiole is nearly three times as long as thick, of a uniform width throughout, longitudinally striated; the second segment is the longest, about one-half longer than the first, broadened at apex to three times its width at base, its basal half longitudinally aciculated; the third segment is two-thirds the length of the second; the fourth, two-thirds the length of the third; the fifth, a little more than half the length of the fourth; the sixth, conical, about as long as the third. Head transverse, finely punctate. Antennæ 12-jointed, brownish-yellow, the club 6-jointed, black; the first and second funicular joints are long, cylindrical, subequal, the third two-thirds the length of the second, stouter, the fourth about one-half the length of the third and thicker. Thorax with small, sparse punctures. Wings with the basal half hyaline, the apical half, except the margin, fuscous; venation brown; the basal nervure distinct, the marginal nervure 3 times as long as the oblique stigmal, the latter terminating in a rounded knob, the postmarginal longer than the marginal.

HABITAT.—St. Vincent, West Indies.

Types in British Museum and National Museum.

Described from 6 ♀ specimens, collected by Herbert H. Smith.

CHROMOTELEIA Ashm., gen. nov.

(Type, *C. semicyanea*.)

Head large, transverse, rounded before, the occiput delicately margined, scarcely emarginate, the vertex not very broad; ocelli 3, trian-

gularly arranged, the laterals touching the eye; eyes very large, ovate, bare.

Antennæ inserted on the clypeus, 12-jointed in both sexes; in ♀ clavate, the club large, 6-jointed, the funicular joints elongate, the first the longest; in ♂ long, filiform.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles tridentate.

Thorax ovate, produced into a little neck anteriorly, the prothorax visible from above as an arcuate line; mesothorax with 2 distinct grooved lines; scutellum semicircular, with a ridge behind; metanotum with a semicircular inclosed space at base, the sides carinated.

Front wings with the submarginal vein distant from the costa, curving, and joining it at about the middle of the wing; marginal vein punctiform; the postmarginal very long; stigmal rather long, oblique, ending in a little knob; basal vein distinct, with a basal cell.

Abdomen very long fusiform, extending beyond the tip of the wings when folded, the second, third, and fourth segments longer than the rest, the fourth a little the shortest.

Legs as in *Macroteleia*, tibial spurs 1, 1, 1, basal joint of hind tarsi about 4 times as long as the second.

A beautiful and distinct genus, remarkable for the large, semicircular inclosure on the metanotum, which, in connection with the venation, renders the genus easy of recognition.

***Chromoteleia semicyanea*, sp. nov.**

(Pl. ix, Fig. 3, ♀.)

♂ ♀. Length, 4.5 to 5^{mm}. Head and thorax cyaneous, punctate; abdomen sessile, very long, pointed fusiform, ochraceous, punctate, the first and second segments striated; first segment a little more than half the length of the second; second and third long, equal, the three following segments shorter, subequal, the last two very minute. Antennæ black, the scape yellow; in ♀ ending in a 6-jointed club, the first funicular joint the longest, about one-half longer than the second and not quite twice the length of the pedicel, the third funicular joint subequal with the second, the fourth a little longer than thick and stouter than the third; in ♂ subfiliform, the first funicular joint twice the length of the pedicel, the joints after the third, except the last, about equal in length, less than twice as long as thick, the last longer, ovate. Wings fuscous, the nervures brown, the marginal vein punctiform, the basal nervure distinct, the stigmal a little curved, ending in a small knob.

HABITAT.—St. Vincent, West Indies.

Types in British Museum and National Museum.

Described from 1 ♂ and 1 ♀ specimen collected by Herbert H. Smith.

OPISTHACANTHA Ashm., gen. nov.*Raia* Ashm., MS. (Olim.).(Type, *O. mellipes* Ashm.)

Head transverse, the occiput and cheeks delicately margined; ocelli 3, triangularly arranged, the lateral close to the eye; eyes large, oval, pubescent.

Antennæ inserted at the clypeus, 12-jointed in both sexes, in the ♀ short, clavate, the club 6-jointed, the last funicular joint very minute; in ♂ filiform, submoniliform.

Mandibles bidentate.

Thorax short, ovoid, the prothorax not visible from above; mesonotum with 2 delicate but distinct furrows; scutellum semicircular; post-scutellum produced into a short, acute spine; metathorax very short, angles subacute.

Front wings ciliated, the submarginal vein reaching the costa a little before half the length of the wing; marginal vein short, not half the length of the stigmal; postmarginal greatly lengthened; the stigmal vein oblique, knobbed; basal vein and basal cell present.

Abdomen oblong-oval, the second and third segments the longest, the third a little longer than the second.

Legs slender, the tibial spurs 1, 1, 1, weak, the basal joint of hind tarsi about 4 times as long as the second.

In general appearance this genus closely resembles a Telenomid, but the venation, carinated abdomen, and the spined postscutellum readily distinguish it.

***Opisthacantha mellipes*, sp. nov.**

(Pl. ix, Fig. 4, ♀.)

♂ ♀. Length, 1.40^{mm}. Black, subopaque, the punctuation so fine as to be scarcely perceptible. Head transverse, broader than the thorax. Eyes very large, pubescent, the space between them narrow. Lateral ocelli close to the eye. Mandibles 3-dentate, brown. Antennæ 12-jointed, brown-black, the scape yellow; in ♀ clavate, pedicel small, the first funicular joint slightly longer than the pedicel, about twice as long as thick; the second and third moniliform, the fourth very minute; the club large, the joints scarcely separable, transverse; in ♂ filiform, the pedicel moniliform, the first and third funicular joints about equal, long-oval, the second small, the joints from the fourth to the twelfth oval-moniliform, the last ovate, longer than the preceding. Mesonotum with two nearly parallel furrows. Scutellum subconvex, with a transverse line at base. Post-scutellum armed with an acute spine or thorn. Legs pale honey-yellow. Wings hyaline, the venation pale brown; the basal nervure delicate, but distinct; the marginal, about as long as the stigmal; the stigmal rather short, oblique, and ending in a knob; postmarginal vein very long. Abdomen long-oval, longer than the head and thorax together; black, with a brownish tinge

at the middle, the first three segments longitudinally striated, the following segments smooth, polished.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead.

Besides the above species, I have seen others from South America and the West Indies.

LAPITHA Ashm., gen. nov.

(Type *L. spinosa* Ashm.)

Head large, transverse, the occiput and cheeks delicately margined; ocelli large, in a triangle; eyes long-oval, bare.

Antennæ inserted close to the clypeus, 12-jointed in both sexes; in ♀ clavate, the club 6-jointed; in ♂ filiform, the flagellar joints all long, cylindrical.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles 3-dentate.

Thorax ovoid, the prothorax not visible from above; mesonotum without distinct furrows, indicated only slightly anteriorly; scutellum large, semicircular, margined behind; metascutellum produced into an acute spine; metathorax short, emarginated, the sides carinated.

Front wings with the submarginal vein reaching the costa beyond the middle of the wing, the marginal vein long or as long as the stigmal; the latter clavate, slightly obliquely curved, the postmarginal longer than the marginal.

Abdomen fusiform, the first three segments nearly equal, the fourth a little more than half the length of the third, the fifth still shorter, the sixth and seventh short, equal.

Legs long, the femora and tibiæ subclavate, the tibial spurs 1, 1, 1, distinct, the tarsi longer than their tibiæ, the basal joint very long, about five times as long as the second joint.

Allied to *Opisthacantha*, but of a larger, more elongate form, the head differently shaped, the venation totally different, the basal nervure being more oblique, the stigmal nervure shorter, the post-scutellar spine longer, more acute, while the abdomen is longer, fusiform, and more narrowed at base.

Lapitha spinosa, sp. nov.

(Pl. IX, Fig. 8, ♂.)

♂. Length, 3.5^{mm}. Head and thorax finely, closely punctulate, brownish-yellow; metathorax with oblique carinæ extending from base of postscutellum; postscutellum produced into an acute spine. Legs yellow. Abdomen fusiform (extending slightly beyond the tip of the wings when folded), black, closely punctate, sometimes the basal half third segment yellow; the first and second segments are striate, the latter with punctures in the striae; first segment a little longer than wide, very slightly wider at apex than at base; second and third seg-

ments the longest, about equal in length; fourth, the length of the first; fifth, two-thirds the length of the fourth; sixth, half the length of fifth; seventh very short, smooth basally; eighth subtriangular, margined. Antennæ filiform, dark brown, the scape and pedicel yellow; second, third, and the last joint of flagellum about equal in length; first and fourth about equal, shorter than the second; joints beyond very slightly shorter. Wings hyaline, with a large smoky blotch below the postmarginal vein; nervures fuscous; basal nervure distinct; marginal nervure as long as the shaft of the stigmal, the latter oblique, clavate at tip.

HABITAT.—St. Vincent, West Indies.

Types in National Museum and British Museum.

Described from 4 ♂ specimens collected by Herbert H. Smith.

CACUS, gen. nov. Riley.

(Type *C. acanthi* Riley.)

“Head subquadrate, emarginate behind, the occiput feebly margined; ocelli 3, triangularly arranged, the lateral close to the eye; eyes ovate, bare.

“Antennæ inserted at the clypeus, 12-jointed in both sexes; in ♀ clavate, the club 6-jointed, the last funicular joint usually transverse, the others longer than wide; in ♂ filiform, the third funicular joint a little dilated and emarginate toward base.

“Mandibles short, either tridentate or bifid at tip.

“Maxillary palpi 3-jointed; labial palpi 2-jointed.

“Thorax ovate, narrowed before, the prothorax slightly visible from above; mesonotum most frequently without furrows, rarely with distinct furrows; metathorax not especially short, with two lateral keels, a median prominence or carina, and with usually two small erect teeth at apex, above the insertion of the abdomen.

“Front wings with the submarginal vein joining the costa a little beyond the middle of the wing, the marginal vein variable, scarcely half the length of the stigmal, or much longer; the latter oblique, terminating in a knob; the postmarginal vein very long, the basal vein subobsolete.

“Abdomen much as in *Baryconus*, but the female without the horn-like projection at base.

“Legs as in *Baryconus*, the tibial spurs 1, 1, 1, the middle and hind pairs weak, tarsi long and slender, the basal joint more than four times the length of the second.”—[From Riley's MS.]

It is probable that under this genus Dr. Riley has included two distinct genera, one distinguished by having 3 dentate mandibles, the other in having the mandibles bifid or 2-dentate, but otherwise they are so similar that for the present I believe it best to follow him in consider-

ing the species congeneric. The type of the genus, *Cacus æcanthi* Riley, has 3-dentate mandibles. Those with 2-dentate mandibles are from South America and the West Indies, and are not included here.

The only species whose parasitism is known was bred by Prof. F. M. Webster from the eggs of *Oecanthus niveus* De Geer.

Cacus æcanthi, sp. nov., Riley.

(Pl. xvi, Fig. 6, ♀.)

“♂ ♀. Length, 2 to 2.20^{mm}. Black, subopaque, closely punctate, and covered with a fine, sericeous down. Head quadrate, the cheeks large, swollen, with striæ converging toward the mouth; mandibles and palpi, pale; antennæ with the base and apex of scape and two last funicular joints pale; pedicel rather long, thicker than the first funicular joint; the latter longer and slenderer than the pedicel; second funicular joint one-third shorter than the first; third and fourth transverse. Thorax without mesonotal furrows; metathorax with a central carina and margined at apex; legs pale rufous, the coxæ slightly dusky basally; wings hyaline, the marginal vein about half the length of stigmal, the latter knobbed at tip, the postmarginal vein long. Abdomen long, sublinear, narrowed at base, about one-third longer than the head and thorax together, and extending beyond the tip of the wings when folded; first segment petioliform, striated, the second and third longitudinally shagreened, nearly equal in length, the following microscopically sculptured.

“The ♂ agrees with the female very closely in shape, but the three basal abdominal segments are striated and the antennæ are filiform, brownish-yellow, the first and second funicle joints being about equal, thrice as long as the pedicel, the third one-third shorter than the second, the following to the last very slightly shorter and almost equal in length, the last pointed, fusiform, and as long as the third flagellar joint.

“HABITAT.—Lafayette, Ind.

“Types in National Museum.

“Bred by Prof. F. M. Webster, May 31, 1881, from the eggs of *Oecanthus niveus*.”—[From Riley's MS.]

Anteris Förster.

Hym. Stud., II, p. 101 (1856).

(Type *A. rufitarsis* Först.)

Head transverse, the face convex or subconvex, not, or but slightly, impressed above the antennæ, the occiput and cheeks delicately margined; ocelli 3, triangularly arranged, the lateral about their width from the border of the eye; eyes oval, usually pubescent.

Antennæ inserted at the clypeus, 12-jointed in both sexes, in ♀ cla-

vate, the club 5 or 6 jointed, subsolid, in ♂ filiform, submoniliform, the second flagellar joint shorter than the first or third.

Mandibles bifid at tips.

Thorax ovoid, the prothorax rounded before, not, or scarcely, visible from above, except the lateral angles; mesonotum broader than long, with two distinct furrows; scutellum semicircular, subconvex, with a punctate frenum behind; metathorax short, carinated at apex.

Front wings with the submarginal vein reaching the costa a little beyond the middle of the wing, the marginal vein usually a little thickened, although linear and scarcely as long as the short stigmal, the latter knobbed at tip, the postmarginal vein very long; basal nervure wanting or subobsolete.

Abdomen oval or oblong oval, the first three segments nearly equal, the third, usually a little the longest.

Legs with all femora and the anterior tibiæ clavate, tibial spurs 1, 1, 1, the basal joint of hind tarsi thrice, or a little more than thrice, as long as the second.

The distinct parapsidal furrows, transverse head, short or punctiform marginal vein, and absence of the horn at base of abdomen distinguish the genus.

Two species in our fauna can be thus tabulated:

Thorax and abdomen, except sometimes the tip, brownish-yellow	2
Mostly black, the collar, pleura, and base of abdomen pale.	
Scutellum smooth, highly polished	A. VIRGINIENSIS.
2. Head black or fuscous.	
Scape, mandibles, and legs yellowish	A. NIGRICEPS.

Anteris virginiensis, sp. nov.

♂. Length, 1.20^{mm}. Black, shining; head transverse; mesonotum very faintly punctate, in marked contrast to the highly polished scutellum; collar, pleura, and base of abdomen rufous or yellowish; mandibles rufous. Antennæ 12-jointed, filiform; scape as long as the first three flagellar joints united; pedicel small, round; first funicular joint the longest, about twice as long as the second; the following joints about equal, longer than the second, but not quite as long as the first. Mesonotum with two distinct furrows. Scutellum semicircular, smooth, polished. Metathorax very short, polished, its posterior margin carinated. Legs, including coxæ, honey-yellow. Wings hyaline, iridescent, the marginal vein thick, as long as the stigmal, the latter oblique, ending in a knob, the postmarginal about three times as long as the marginal, the basal vein subobsolete. Abdomen long-oval, as long as the head and thorax together, smooth, polished, the first segment and the second, at base, striated; the first segment is yellowish, the third the largest, about one-third longer than the second, or a little more than twice as long as the fourth.

HABITAT.—Virginia.

Type in National Museum.

Described from a single specimen taken by Mr. Theo. Pergande, October 10, 1880.

Anteris nigriceps, sp. nov.

(Pl. x, Fig. 2, ♀.)

♂ ♀. Length, 1.8 to 2.1^{mm}. Head and thorax closely, minutely punctate; three basal abdominal segments striated. Head and abdomen black, the petiole and second segment at base, yellow, sometimes fuscous or black; mandibles pale, the teeth black; thorax and legs brownish-yellow; in ♀ the scutellum and metathorax fuscous or black, rarely so in ♂; mesonotum with 2 furrows. Antennæ 12-jointed, black, the scape yellow, sometimes the pedicel in female yellow; in the ♀ the first funicular joint is long, longer than the pedicel, the second scarcely half as long as the first, the third very slightly shorter than second, the fourth transverse, club long, fusiform; in ♂ filiform, the first funicular joint about twice as long as the pedicel, the third shorter, emarginated at base, the second shorter than the third, the joints after the third oblong oval, about twice as long as thick. Wings hyaline or subhyaline; the marginal vein punctiform or about twice as long as thick, the stigmal vein oblique, ending in a distinct rounded knob.

HABITAT.—Jacksonville, Fla., and Arlington, Va.

Types in Coll. Ashmead.

Described from several specimens.

APEGUS Förster.

Hym. Stud., II, p. 101 (1856).

(Type *A. leptocerus* Först.)

Head transverse quadrate or subquadrate, the occiput concave, margined; ocelli 3, triangularly arranged, the lateral a little away from the margin of the eye; eyes large, oval, bare.

Antennæ inserted just above the clypeus, 12-jointed, filiform in both sexes.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles 3-dentate.

Thorax long ovoid, the prothorax visible from above, especially laterally; mesonotum with 2 distinct furrows, abbreviated anteriorly; scutellum short, with a row of punctures posteriorly; metathorax short, with the dorsum bicarinated.

Front wings with the marginal vein usually longer than the stigmal, the postmarginal greatly lengthened, the stigmal oblique, with a slight knob at tip; basal vein wanting.

Abdomen sessile, fusiform, always much longer than the head and thorax together, all the segments lengthened, the second and third the longest, the first and second with lateral dorsal carinæ.

Legs rather long, the femora clavate, tibiæ long, subclavate, tibial spurs 1, 1, 1, distinct, the tarsi lengthened, slender, the basal joint more than thrice as long as the second.

This genus is closely allied to *Macroteleia*, but is distinguished by filiform antennæ in both sexes.

***Apegus elongatus* Ashm.**

Anteris elongatus Ashm., Ent. Am., III, p. 118; Cress. Syn. Hym., p. 314.

♂. Length, 4.5^{mm}. Elongate, linear, black; the head, thorax, and abdomen with round punctures, sparsely covered with a whitish pubescence; cheeks bulging, rugoso-punctate. Mandibles 3-dentate, pale brown. Mesonotum with 2 furrows. Scutellum short, with a row of large punctures posteriorly. Metathorax coarsely furrowed, with two carinæ on the disk and lateral keels. Antennæ 12-jointed, filiform, pale brownish-yellow, the tips fuscous; first funicular joint a little longer than the pedicel; second shorter; third slightly emarginated at base, the following, except the last, moniliform, scarcely longer than thick, the last longer than the penultimate. Legs brownish-yellow, the posterior coxæ a little dusky at base. Wings fusco-hyaline, the venation brown; the submarginal vein is very long, the marginal about twice as long as the stigmal, the postmarginal very long. Abdomen fully twice as long as the head and thorax united, punctate, segments 1, 2, and 3 dorsally towards sides, carinated, the second and fourth segments about equal, the third a little longer.

HABITAT.—Florida.

Type in Coll. Ashmead.

***HOPLOTELEIA* Ashm., gen. nov.**

(Type *H. floridana* Ashm.)

Head transverse-quadrate, the cheeks margined, the face with a deep impression above the antennæ; ocelli 3, in a triangle, the lateral close to the margin of the eye; eyes large, oval.

Antennæ inserted close to the mouth, 12-jointed in both sexes; in ♀ clavate, in ♂ filiform.

Maxillary palpi short, 4-jointed; labial palpi 3-jointed.

Mandibles 3-dentate.

Thorax ovoid, the prothorax slightly visible from above; mesonotum with 3 distinct furrows; scutellum large, semicircular; postscutellum with 2 erect teeth; metathorax short, the hind angles slightly prominent.

Front wings, when folded, not extending to the tip of the abdomen, the submarginal vein joining the costa a little beyond half the length of the wing, the marginal vein very short, almost punctiform, the postmarginal very long, the stigmal long, oblique, terminating in a small knob; basal vein obsolete.

Abdomen sessile, fusiform, the third segment slightly the longest; in ♀ pointed at apex, in ♂ truncate, with 2 prongs.

Legs moderately stout, pilose, the tibial spurs 1, 1, 1, well developed, the tarsi not, or but slightly, longer than the tibiae, the basal joint of hind tarsi about $3\frac{1}{2}$ times as long as the second, with stiff bristles beneath.

The three impressed lines on mesonotum, the spined postscutellum, and the venation separate the genus at once from all others, although otherwise it resembles *Baryconus* and *Macroteleia*.

Besides the species described here from North America, I have another species in my collection from South America. Nothing is known of the habits of the genus.

Hoploteleia floridana Ashm.

(Pl. x, Fig. 1, ♂.)

Baryconus floridanus Ashm., Ent. Am., III, p. 118; Cross. Syn. Hym., p. 314.

♂ ♀. Length, 3.5 to 4^{mm}. Brown-black, coarsely rugoso-punctate, the middle of mesonotum smoother, closely punctate. Antennae 12-jointed; in ♂ filiform, brown, the scape yellowish; pedicel triangular; flagellar joints to fifth subequal, the first the longest, the third excised at base; joints from fifth to last a little longer than the fourth; the last $1\frac{1}{2}$ times as long as the penultimate; in ♀ clavate, the club joints broader than long. Mesonotum with 3 distinct furrows. Pleura impressed, lineated. Scutellum rugose, with coarse, irregular punctures. Postscutellum with two short, erect teeth. Wings subhyaline, tinged with fuscous; in the ♀ the marginal vein is very short, about one-third the length of the stigmal, or nearly punctiform; in the ♂ longer, fully half the length of the stigmal; postmarginal vein very long; stigmal, oblique, not curved, ending in a small knob. Legs brownish-yellow, in ♀ with the coxæ black. Abdomen fusiform, sessile, lineately rugose, the basal segment deeply fluted, in ♀ pointed at apex, in ♂ truncate and ending in two spines.

HABITAT.—Jacksonville, Fla., and Arlington, Va.

Types in Coll. Ashmead.

The types of this species and genus were collected by myself in Florida, but I have a ♂ taken in Virginia, and Mr. Herbert Smith has taken another species in South America, so that the genus is widely distributed.

CREMASTOBÆUS Ashm., gen. nov.

(Type *C. bicolor* Ashm.)

Head transverse, the face convex, the vertex not very broad, rounded off towards occiput, the latter a little emarginated; ocelli 3, triangularly arranged, the lateral touching the eye; eyes very large, round, hairy.

Antennae inserted close to the clypeus, 12-jointed in both sexes, in

♀ short, clavate, the club large oval, compact, 5-jointed; in ♂ subclavate, submoniliform.

Mandibles short, bidentate.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Thorax ovate, produced into a little neck anteriorly; the mesonotum subconvex, without furrows; the scutellum semicircular; the metathorax short, the angles not prominent.

Front wings with the submarginal vein joining the costa at about half the length of the wing, the marginal vein short, linear, the postmarginal very long, the stigmal short, oblique, clavate.

Abdomen fusiform, sessile, a little longer than the head and thorax together, with the segments strongly constricted at the sutures, the first the longest, the following subequal.

Legs with the femora and tibiæ subclavate, the tibial spurs well developed 1, 1, 1, the middle and posterior tarsi not longer than their tibiæ, the basal joint of hind tarsi about thrice as long as the second.

This genus is readily distinguished by the constricted abdominal segments. I have species from South America and have seen others from the West Indies, but no doubt the genus will be found to occur also in our fauna.

Cremastobæus bicolor, sp. nov.

(Pl. x, Fig. 3, ♀.)

♂ ♀. Length, 1 to 1.1^{mm}. Head and thorax black, faintly microscopically punctate, the punctation not destroying the luster of the surface; eyes oval, pubescent; abdomen brownish-yellow, fusiform, the segments strongly constricted at the sutures, the sutures crenate; legs yellow. Antennæ brownish-yellow, the club oval-rotund, 5-jointed, black; the first funicular joint is the stoutest and longest joint, the following to the club gradually subequal, the last two rounded, a little transverse. Wings hyaline, the marginal vein a little longer than the stigmal, the latter short, oblique, ending in a little knob; no trace of basal or anal nervures.

The ♂ is entirely black, with the scape, pedicel of antennæ, and the legs, yellow; the thorax more distinctly punctate; flagellum sub-filiform, brown, pubescent, very slightly thickened toward tip, the joints, after the first, submoniliform, scarcely longer than thick.

HABITAT.—St. Vincent.

Types in National Museum and British Museum.

Described from one ♀, three ♂ specimens collected by Herbert H. Smith.

HADRONOTUS Förster.

Hym. Stud., II, p. 101 (1856).

(Type *H. laticeps* Först.)

Head transverse, usually very wide, the frons convex, the face with an impression above the insertion of the antennæ, cheeks margined;

ocelli 3, triangularly arranged, the lateral contiguous to the eye; eyes large, oval, usually bare, sometimes pubescent.

Antennæ inserted close to the mouth, 12-jointed in both sexes, in ♀ clavate, the club 6-jointed, in ♂ filiform, pubescent.

Maxillary palpi short, 4-jointed; labial palpi 3-jointed.

Mandibles bidentate.

Thorax oval, truncate anteriorly, the angles of the prothorax alone visible from above; mesonotum much wider than long, without furrows; scutellum rather large, semicircular, convex; metathorax very short, abrupt.

Front wings with the submarginal vein attaining the costa at about half the length of the wing, or a little before; marginal vein variable, punctiform, or rarely more than half the length of the stigmal, the latter rather long, oblique.

Abdomen broadly oval, sessile, carinated along the sides, the second segment the largest, the first and third about equal.

Legs with the femora and tibiæ subclavate, the tibial spurs 1, 1, 1, distinct, the tarsi long, slender, the basal joint of hind tarsi about thrice as long as the second.

This genus closely resembles *Telenomus* and could only be confused with it, for, like that genus, it is found parasitic in the eggs of various Hemiptera. It is, however, readily distinguished by the distinctly carinated abdomen, the 12-jointed antennæ in the females, the coarser sculpture, and the more sessile abdomen.

It occurs in all parts of the world and is particularly well represented in the South American and West Indian faunas, where no doubt it does good service in diminishing the number of Hemiptera to be found there.

The several species found in the United States may be readily separated by the aid of the following table:

TABLE OF SPECIES.

Species very coarsely rugoso-punctate	2
Species smooth, at the most faintly punctate or shagreened, sericeous.	
Coxæ black or dusky, legs yellow, or pale brownish-yellow.	
Head and thorax shagreened, the scutellum finely punctate.	
Abdomen polished, the first and second segments faintly longitudinally aciculated, the second, without a row of punctures at base.	
	H. LARGI, sp. nov.
Head distinctly punctate, the thorax faintly punctate.	
Abdomen closely, finely punctate, the basal and apical edges of all the segments smooth, polished, the first segment striate at base, the second with a row of striate punctures at base.....	H. LEPTOCORISÆ How.
Head and thorax closely, finely punctulate, opaque.	
Abdomen smoother, shining toward apex, the first and second segment striated	H. MYRMECOPHILUS, sp. nov.
2. Coxæ and legs brownish-yellow.	
Abdomen with coarse, longitudinal cribrate rugosities on all the segments, smooth and polished along the sutures.....	H. RUGOSUS How.

Abdomen cribrate rugose, the first segment with deep coarse striæ, the following smoother, the segments not smooth along the sutures.

H. FLORIDANUS Ashm.

Abdomen finely, evenly rugose, the first segment striate at base.

H. ANASÆ Ashm.

Coxæ black, the legs brownish-yellow.

Head and thorax rather coarsely rugose, the thorax and abdomen very finely rugoso-punctate, the mesonotum posteriorly slightly lineated; first abdominal segment and the second, at base only, striated.

H. RUGICEPS, sp. nov.

***Hadronotus largi*, sp. nov.**

♂ ♀. Length, 0.80 to 1^{mm}. Black, opaque; head transverse, finely shagreened; mandibles, palpi, antennal scape, apex of pedicel, and legs, honey-yellow; coxæ slightly dusky. Antennæ 12-jointed, clavate, brown-black, except as before mentioned; pedicel longer than the first funicular joint; second and third funicular joints not, or scarcely, longer than wide; the joints beyond all transverse. Thorax with fine wavy longitudinal rugæ; scutellum almost smooth, the punctation being microscopic. Wings hyaline, the venation yellowish, the marginal vein short, scarcely half the length of the oblique stigmal vein. Abdomen broadly oval, sessile, smooth, shining, the first and second segments faintly longitudinally aciculated.

In the ♂ the antennæ are filiform, honey-yellow, the pedicel longer than the first funicular joint, the second funicular small, the third enlarged, stout, the joints beyond transverse, twice as wide as long, subserrate, the last oval.

HABITAT.—Los Angeles, Cal.

Types in National Museum.

Described from several specimens bred by Mr. D. W. Coquillett, from the eggs of *Largus succinctus*.

***Hadronotus leptocorisæ* How.**

Hubbard's Orange Insects, App., p. 215; Ashm. Ent., Am. III, p. 118; Cress. Syn. Hym., p. 314.

♀. Length, 1.4^{mm}; expanse, 2.5^{mm}. Head and thorax evenly covered with small round punctures, except in the facial impression, which is transversely striate; antennæ subelavate; lateral ocelli nearly touching the margins of the eyes. Mesonotum a trifle smoother than the head, and furnished with a very fine white pubescence. First segment of the abdomen dorsally longitudinally striate; remaining segments closely covered with fine round punctures; ventral surface sparsely punctate. Color brown; scape brown; all coxæ black; all trochanters, femora, tibiæ, and tarsi light brown; mandibles and wing veins light brown.

♂. Length, 1.3^{mm}; expanse, 2.8^{mm}. Antennæ filiform. In other characters resembling the ♀. (*Howard*.)

HABITAT.—Crescent City, Fla.

Types in National Museum.

Bred by Mr. H. G. Hubbard from the eggs of *Zelus bilobus* Say, wrongly determined as the eggs of *Leptocorisa tipuloides*.

Hadronotus myrmecophilus, sp. nov.

♂. Length, 1^{mm}. Head and thorax finely closely punctulate, opaque; the apex of the abdomen smoother, shining, the two basal segments punctate and striate, the following almost smooth. Head very wide, the cheeks flat, delicately margined. Antennæ 12-jointed, filiform, the scape yellowish, the flagellum dark-brown, thicker than the scape and pedicel; first flagellar joint the longest, longer than the pedicel, second, half the length of the first, a little contracted, third, very slightly longer, a little dilated outwardly toward one side; following joints scarcely as long as thick. Legs brownish-yellow, the coxæ black. Wings subfuscous, the marginal vein punctiform, not longer than thick, the stigmal oblique, the postmarginal very long.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

This species was taken from an ant's nest. It differs decidedly from the other species in the sculpture of the head and thorax and in the smooth, apical abdominal segments.

Hadronotus rugosus How.

Insect Life, Vol. 1, p. 242.

♀. Length, 1.8^{mm}. Antennæ arise immediately above the mouth; scape reaches nearly to anterior ocellus; pedicel subcylindric, as long as first funicle joint; funicle joints increasing regularly in width from joint 1 to basal joint of club; joint 1 of funicle twice as long as 2, the remaining joints subequal in length; joint 2 of club equal to joint 1; joint 3 longer than 2 and pointed. Head and face closely, deeply, and regularly punctate; facial impression shallow, with transverse punctures and with a distinct, central longitudinal carina. Mesonotum strongly punctate, the punctures of the scutum assuming a longitudinal direction. Dorsal surface of abdomen strongly longitudinally rugose, each joint smooth at extreme base and apex, the rugosities strongest upon joint 1, growing slightly fainter on succeeding joints; joint 2 longest, joints 1 and 3 shorter; venter with well-marked circular punctures. Entire surface of body with sparse whitish pilosity. General color, black; mouth parts, antennæ, and legs honey-yellow, except that the front coxæ, antennal club and pedicel, and first two funicle joints above are brownish.—(Howard.)

HABITAT.—Rockledge, Fla.

Types in National Museum.

Mr. Howard described this species from 3 ♀ specimens dissected from the supposed eggs of *Dysdercus suturellus*, sent to Dr. Riley by Mr. H. S. Williams, April 1, 1889. The eggs appear to me to be those of *Euthoctha galeator* Fabr., with which I am quite familiar, from my long residence in Florida.

Hadronotus floridanus Ashm.

Ent. Am., III, p. 118; Cress. Syn. Hym., p. 314.

♂ ♀. Length, 1.5^{mm}. Head and thorax very coarsely rugose, the abdomen eribrate rugose, the first segment with coarse striæ; scape and legs brownish-yellow, the coxæ sometimes brownish-black.

Antennæ 12-jointed, in ♀ clavate, the pedicel not longer than the first funicular joint, the second funicular joint about half the length of the first, the third and following, transverse; in ♂ filiform, pale brownish-yellow, the first funicular joint the longest, longer than the pedicel, the second one-third shorter than the first, the third slightly dilated toward one side at apex, the following a little longer than wide, the last pointed, almost as long as the first funicular. Wings hyaline, the venation yellowish, the marginal vein very short. Legs, including coxæ, brownish-yellow.

HABITAT.—Jacksonville and Cocoanut Grove, Fla.

Types in Coll. Ashmead and National Museum.

Described from many specimens reared from the eggs of *Metapodius femoratus* Fabr.

This species is most closely allied to *H. rugosus* Howard, but quite distinct in the sculpture of the abdomen.

***Hadronotus anasæ* Ashm.**

Telenomus anasæ Ashm., Bull. No. 14 U. S. Dept. Agric., p. 23; Cress. Syn. Hym., p. 314.

♂ ♀. Length, 1.2^{mm}. Black, coarsely, irregularly rugoso-punctate, with a sparse whitish pubescence, the abdomen more evenly and less coarsely sculptured, somewhat lineated, the extreme apical edges of the segments smooth, polished, the first segment striate, the second a little longer than the first and the longest segment, the third a little shorter than the first. Head large and broad, about 3½ times as wide as thick antero-posteriorly, and wholly rugose. Antennæ 12-jointed, in ♀ clavate, brown, the scape, pedicel, and sometimes the funicular joints, yellow; the pedicel is one-half longer than the first funicular joint, the second funicular shorter than the first, the third and fourth transverse, club acuminate towards apex; in ♂ subfiliform or subclavate, the pedicel shorter than the first funicular joint, the second and third subequal, shorter than the first; the following joints, except the last, which is ovate, are a little wider than long. Mandibles large, pale or yellowish. Wings hyaline, the marginal vein punctiform. Legs brownish-yellow, the coxæ sometimes dusky, more rarely black.

HABITAT.—Jacksonville, Fla.

Types in National Museum and Coll. Ashmead.

Described from many specimens reared by myself from the eggs of *Anasa tristis* De Geer. Dr. R. S. Turner reared, May 20, 1880, a large series from the same insect eggs at Fort George Island, Florida, and Miss Mary Murtfeldt reared August 2, 1882, a variety with black coxæ at Kirkwood, Mo.

***Hadronotus rugiceps*, sp. nov.**

♀. Length, 1.5^{mm}. Head and scutellum rather coarsely but shallowly rugoso-punctate; the thorax and abdomen finely rugoso-punctate,

pubescent, the mesonotum a little lineated posteriorly. Head large, wider than the thorax, the cheeks margined. Antennæ 12-jointed, dark-brown, the scape pale at base; first funicular joint slender, cylindric, scarcely longer than the pedicel, the latter pale at tip; second and third funicular joints short, quadrate; the fourth wider; club 6-jointed. Wings subfuscous, the marginal vein nearly as long as the stigmal. Legs brownish-yellow, the coxæ black. Abdomen oval, the first segment and the second, at base, striate, the following segments all finely closely punctulate.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen. The sculpture of the head and scutellum and the length of the marginal vein readily distinguish the species.

BÆONEURA Förster.

Hym. Stud., II, p. 100 (1856).

Head quadrate, anteriorly with a carina between the antennæ, frons depressed; ocelli widely separated, the lateral close to the hind margin of eye. Eyes large, oval, occupying the whole side of the head.

Antennæ 12-jointed, inserted at the clypeus, in ♀ clavate, in ♂ filiform.

Mandibles short and broad, bidentate.

Thorax ovoid, as in *Phanurus*, polished, without furrows, the scutellum short, the metanotum divided by a central carina into two areas.

Wings very narrow and strongly fringed, with only a stigmal vein that ends in a knob before attaining the costa.

Abdomen elongate fusiform, strongly depressed, subsessile, the first segment narrowed, but wider than long, the second and third segments subequal and the longest and broadest segments.

Legs normal.

A curious little genus, remarkable for the narrow and strongly fringed front wings and the peculiar venation, strongly recalling some of the forms in the Family *Mymaridae*, with which it might easily be confused. It also resembles *Phanurus*, in the Tribe Telenomini.

Förster says of it: "Not much larger than *Bæus*, although much more elongate and narrower, stands the genus *Bæoneura*. In this genus, however, we find the club distinctly jointed. It is readily distinguished from the following described genera by the small development of the submarginal vein, which passes from the base into the field of the wing, but does not unite with the costa. In the formation of the wings it forms, therefore, a fine transition to the *Platygastridae*."

Förster's type seems not to have been described, and the following species is, therefore, the first species to be described. Kirchner, in his Cat. Hym. Eup., p. 193, mentions the fact, however, that there are two species found in Europe, but gives no names.

Bæoneura bicolor sp. nov.

(Pl. ix, Fig. 6.)

♀. Length 1^{mm}. Elongate, highly polished, black; abdomen, legs and antennæ, except the club, brownish or honey-yellow. Wings hyaline, narrow, strongly fringed. Club of antennæ brown, 5-jointed. Abdomen pointed fusiform, much longer than the head and thorax united, flat, or strongly depressed.

Habitat.—Arlington, Va.

Type in Coll. Ashmead.

A single specimen, taken by beating.

IDRIS Förster.

Hym. Stud., II, p. 102 (1856).

(Type *I. flavicornis* Först.)

Head transverse or subquadrate, the cheeks and occiput delicately margined; ocelli 3, in a triangle, the lateral not touching the border of the eye; eyes large, oval, pubescent.

Antennæ inserted close to the mouth, 12-jointed in both sexes; in ♀ clavate, the club 6-jointed; in ♂ filiform.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles deeply bifid at apex.

Thorax ovoid, rounded before, the prothorax slightly visible from above; mesonotum a little broader than long with two distinct furrows, sometimes obsolete posteriorly; scutellum semicircular, with a punctate frenum; metathorax short, subemarginated.

Front wings when folded extending to, or a little beyond, the tip of the abdomen, the submarginal vein long, reaching the costa beyond the middle of the wing, the marginal vein short, the postmarginal vein scarcely developed or never longer than the shaft of the stigmal vein, the latter rather short, oblique, and knobbed at tip; basal nervure wanting.

Abdomen oblong-oval, subpetiolated, the first and second segments about equal, the third the longest segment.

Legs very similar to *Hadronotus*.

Iris læviceps sp. nov.

♂. Length 1.50^{mm}. Black, polished, the thorax faintly microscopically punctate, sparsely pubescent. Mandibles rufous, the teeth and apex black. Antennæ and legs reddish yellow. Mesonotum with two furrows. Wings subhyaline, fringed, the basal vein distinct, the marginal, twice as long as thick, the postmarginal but slightly developed, the stigmal short, terminating in a little knob. Abdomen black, polished, pubescent toward the apex, the first and second segments striated.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen.

ACANTHOSCELIO Ashm., gen. nov.(Type *A. americanus*.)

Head large, subquadrate, with a frontal ledge as in *Sparasion*, the occiput rounded, margined; ocelli 3, in a triangle, the lateral not quite touching the margin of the eye; eyes very large, rounded.

Antennæ as in *Scelio*.

Maxillary palpi 3-jointed.

Thorax ovoid, prothorax visible from above, only at the sides; truncate anteriorly; mesonotum convex, without furrows; scutellum large, quadrate, the posterior margin slightly arcuately emarginate, the angles acute; postscutellum produced into a large erect spine; metanotum short, abrupt, the angles prominent.

Front wings with the submarginal vein remote from the costa and curving and joining a punctiform marginal vein at about the middle of the wing; stigmal vein rather long, oblique, with a long radial branch, that forms a long, lanceolate marginal cell.

Abdomen sessile, oblong-oval, depressed, strongly carinated along the sides and composed of 6 segments, the first and second nearly equal, the third the longest.

Legs as in *Scelio*, the tibial spurs well developed.

The affinities of this remarkable genus are with *Scelio* and *Sparasion*; it agrees with the former in all the essential characters, except in having a frontal ledge, the structure of the meso- and meta-scutellum, and in venation; with the latter it agrees only in its cephalic characters. It is at once distinguished from both by the shape of the scutellum and the strong erect postscutellar spine, the shape of the scutellum being, indeed, unique in the family.

The genus is founded upon a male specimen, collected by Mr. Herbert Smith, at Chapada, in South America, and a female specimen in the Berlin Museum, labeled "Bogota."

Acanthoscelio americanus sp. nov.

(Pl. x, Fig. 6, ♂.)

♂. Length 3^{mm}. Opaque, coarsely rugose; antennæ, post-scutellar spine, legs, except the black coxæ, and the lateral margins of the abdomen, brownish-yellow; wings fuscous, yellowish-hyaline at base.

HABITAT.—Chapada, Brazil, South America.

Type in Coll. Ashmead.

Acanthoscelio flavipes, sp. nov.

♀. Length, 3.4^{mm}. Black, coarsely, deeply punctate; antennæ, except the 6-jointed club, the palpi, the legs, including coxæ, metathorax, first abdominal segment and the lateral margins of the second and third, reddish-yellow. Head subglobose, as wide as the thorax, with a frontal ridge, coarsely rugoso-punctate. Eyes very large, round. Mandibles

black, curved, with a tooth within. Antennæ 12-jointed, clavate, very short; first funicular joint not longer than the pedicel; second not longer than wide; third and fourth transverse; club large, 6-jointed, black, the joints transverse. Thorax ovoid, the mesonotum without furrows. Scutellum quadrate, elevated posteriorly, the angles acutely produced. Metascutellum produced into a large, erect spine. Metathorax ridged at the sides with the angles toothed. Wings fuliginous, the basal one-third yellow, the venation similar to *Scelio*. Abdomen elongate oval, rugulose; first segment transverse, a little shorter than the second; third very slightly longer than the second; fourth very slightly shorter; fifth about one-half the length of the fourth; the following very short.

HABITAT.—Bogota.

Type in the Berlin Museum.

Described from a single specimen.

SPARASION Latreille.

Hist. Nat., III, p. 316 (1802); Förster Hym. Stud., II, p. 101 (1856).

(Type, *S. frontale* Latr.)

Head transverse, or subquadrate, with a frontal ledge or carina; ocelli 3, in a triangle but widely separated; eyes oval.

Antennæ in both sexes 12-jointed, inserted just above the clypeus, in ♀ clavate, the funicular joints submoniliform; in ♂ long, subsetaceous, the flagellar joints all longer than thick.

Maxillary palpi elongate, 5-jointed; labial palpi 3-jointed.

Mandibles elongate, bidentate, the teeth subequal.

Thorax ovoid, narrowed into a little neck anteriorly; prothorax distinctly visible from above, dilated at sides; mesonotum usually with 2 furrows; scutellum large, semicircular; metathorax with the angles produced into short spines.

Front wings with the submarginal remote from the costa and terminating in a small stigma from which issues a short stigmal and a short postmarginal.

Abdomen long, ovate, depressed, sessile, the sides carinated, in ♀ with 6, in ♂ with 7 segments, the segments nearly equal.

Legs of moderate length, pilose, the tibial spurs 1, 2, 2, the claws simple.

The frontal ledge and the 5-jointed maxillary palpi readily distinguish the genus from *Scelio*, while the differences in the scutellum and post-scutellum separate it from *Acanthoscelio*.

TABLE OF SPECIES.

Wings fuscous or fuliginous 2
Wings hyaline.

Scapulae with a grooved line their whole length.

Legs, except coxae, honey-yellow; flagellar joints after the first twice as long as thick.....*S. famelicum* Say.

2 Scapulae without a grooved line or only slightly indicated at the middle.

Legs black, anterior and middle tibiae and all tarsi, honey-yellow, the posterior tibiae dusky at the middle.

Frontal ledge broad, on the same plane with the vertex; postscutellum toothed; pedicel a little shorter than first flagellar joint; flagellar joints after the first only a little longer than thick; scapulae impunctate.

S. pilosum Ashm., sp. nov.

Frontal ledge not so broad or on the same plane with the vertex, more oblique; postscutellum not or but slightly toothed.

Pedicel much shorter than the first flagellar joint, the flagellar joints after the first wider than long (♀); the flagellar joints after the first more than twice as long as thick (♂) *S. nigrum* Ashm., sp. nov.

Pedicel longer than the first flagellar joint, the joints beyond about as long as thick, ♀; in ♂ the pedicel is scarcely half the length of first flagellar joint. *S. pacificum* Ashm., sp. nov.

***Sparasion famelicum* Say.**

Bos. Jour., I, p. 276; Lec. Ed. Say, II, p. 223; Cress. Syn. Hym., p. 248.

♀. Length, 4.5^{mm}. Elongate, black, subopaque, punctate; head with a frontal ridge, rugose; thorax shining, with small, rounded punctures, the parapsidal furrows distinct, the scapulae with a longitudinal grooved line; scutellum margined posteriorly; metathorax narrowed toward apex, broader at base than long, with two parallel median carinae, postscutellum not toothed, the posterior angles subprominent; abdomen as long as the head and thorax together, oblong-oval, longitudinally striated; wings hyaline, the venation brown black, the stigmal vein ending in a knob with a radial ray from its tip; postmarginal as long as the stigmal; legs, except the black coxae, honey-yellow; antennae filiform, 12-jointed, fuscous, extending to the tip of the metathorax.

HABITAT.—Indiana and Fort George, Fla.

Described from a single specimen taken by Dr. R. S. Turner at Fort George, Fla., and which I think without doubt is this long-lost species.

***Sparasion pilosum* sp. nov.**

(Pl. x, Fig. 7, ♀.)

♂ ♀. Length, 4 to 5^{mm}. Black, shining, very pilose, head rugose from large, coarse punctures; the ledge very broad, on the same plane with the vertex, with a broad sulcus along the anterior margin. Antennae 12-jointed, black, the pedicel and first flagellar joint more or less piceous, the latter in ♀ one-third longer than the pedicel, in ♂ about equal, the joints beyond a little longer than thick. Thorax sparsely punctate, the parapsidal furrows distinct, the metathorax rugose, emarginate behind with a Λ-shaped carina, the angles slightly prominent. Wings fuscous, a little paler toward base, the venation black, the stigma quadrate, black. Legs black, the tibiae and tarsi, honey-yellow, the hind tibiae dusky at the middle. Abdomen smooth, shining, longitudinally striate, more coarsely striate in the male.

HABITAT.—Nevada and Washington.

Types in Coll. Ashmead.

Described from two specimens.

Sparasion nigrum, sp. nov.

♂ ♀. Length, 3 to 3.5^{mm}. Very close to *S. pilosum*, but quite distinct in the very short frontal ledge, and in its antennal characters. The ledge in the ♂ merely a slight transverse carina, but in the ♀ it is broader and slightly oblique, the head rugose but still not so coarsely rugose as in *S. pilosum*. In the ♂ the antennæ are long, filiform, the pedicel less than half the length of the first flagellar joint, the joints beyond more than twice as long as wide; in ♀ the pedicel is shorter than the first flagellar joint, the flagellar joints after the first distinctly wider than long. Abdomen in ♂ opaque, rugose, the rugosities longitudinally directed; in ♀ shining, punctate and striate.

HABITAT.—Pen Mar, Pa., and Oakland, Md.

Types in Coll. Ashmead.

Sparasion pacificum, sp. nov.

♂. Length, 3 to 3.5^{mm}. Black, shining, with long, sparse hairs; legs brownish-yellow, pilose, the coxæ and femora black; head rugose, anteriorly with a broad semicircular ledge, margined anteriorly and with a curved carina at base, conforming to the curve of the ledge. Antennæ 12-jointed, filiform, black, the pedicel and two basal joints of flagellum, brown or piceous; first flagellar joint in ♂ twice the length of pedicel, narrowed toward base, the joints beyond very little longer than wide, the joint ovate; in ♀ the pedicel is much longer than the first flagellar joint, the joints beyond about as long as thick. Thorax with sparse punctures, the collar dilated at sides to tegulæ, rugose anteriorly; mesonotum with 2 furrows, ending just before reaching the scutellum; scutellum subconvex, margined behind and with some punctures in the frenum; metathorax rugose, with prominent rounded angles. Wings fuscous, stigma and nervures brown-black, the stigmal vein slightly curved, ending in a knob, with a fuscous ray directed toward the apex of wing, forming a long open marginal cell. Abdomen oblong-oval, smooth, polished, pilose, the second and third sutures with punctures at bottom, the segments nearly equal, the first truncate and carinated at base.

HABITAT.—California.

Types in National Museum and Coll. Ashmead.

Three specimens in the National Museum were collected in August, by Koebele, in Marion County, Cal.; another in the Santa Cruz Mountains, while my collection contains but a single specimen from California, obtained by purchase.

SCELIOMORPHA Ashm., gen. nov.

(Type *S. longicornis* Ashm.)

Head transverse quadrate, the occiput and cheeks margined; ocelli 3, large, in a triangle, the lateral not touching the eye; eyes large, oval or rounded, hairy.

Antennæ in ♂ subsetaceous, 12-jointed, the flagellar joints all long cylindrical.

Maxillary palpi long, 5-jointed; labial palpi 3-jointed.

Mandibles arcuate, 3-dentate, the outer tooth large, the inner two teeth small, equal.

Thorax ovoid, the prothorax abruptly truncate before, dilated at sides; mesonotum a little wider than long, with two deep distinct furrows; scutellum large, rounded behind; metathorax rounded behind, the angles prominent.

Front wings as in *Sparasion*.

Abdomen fusiform, depressed, sessile, the sutures of the segments deep, the segments themselves nearly equal in length.

Legs much as in *Sparasion*, the tibial spurs being 1, 2, 2, but the hind femora are much more swollen.

This genus agrees more closely with *Sparasion* than any other genus, and like that it is very hairy; but the absence of the frontal ledge, the more distinctly pilose eyes, longer antennæ, and the swollen posterior femora separate it at once.

***Scellomorpha longicornis*, sp. nov.**

(Pl. x, Fig. 8, ♂.)

♂. Length, 3.5^{mm}. Black, closely, rather coarsely, punctate, pilose; legs, except coxæ, reddish-yellow; wings fuliginous; antennæ 12-jointed, long, filiform, tapering to a point, extending to the middle of the abdomen; the pedicel annular, piceous; flagellar joints after the first about 3½ times as long as thick, the second slightly emarginate at base; abdomen striate and punctate, as in *Sparasion*.

HABITAT.—Santarem. (Herbert Smith.)

Type in Coll. Ashmead.

(?) ***Scellomorpha bisulca*, sp. nov.**

♀. Length, 3.4^{mm}. Brown-black, finely rugose, sparsely pubescent; scutellum and abdomen longitudinally lineately rugose; antennæ reddish-yellow, the club brown; legs, except black coxæ, brownish-yellow or reddish-yellow. Head transverse, reticulately rugose; the occiput roundly emarginate, not margined; the face subconvex; the cheeks short, margined. Eyes ovate. Mandibles small, triangular, rugose. Antennæ 12-jointed, very short, the scape reaching only a little beyond the middle of the face; pedicel longer than the first and second funicular joints united; all funicular joints transverse; club wider, the joints transverse. Pronotum produced into a collar anteriorly; mesonotum with 2 distinct furrows; scutellum semicircular margined behind; metathorax closely punctate, with a median furrow, the angles straight, but not prominent. Wings subfuscous, the marginal vein ending in an oblique stigma. Abdomen fusiform, depressed, sessile; the first and second segments about equal, half the length of the third; third and

fourth equal, one-third shorter than the second; fifth and sixth very short; venter shining, faintly lineated.

HABITAT.—Texas and Florida.

Types in National Museum and Coll. Ashmead.

The specimen in the National Museum is in the old Belfrage collection, while that in my own collection was captured, by myself, holding on to the elytron of a short-winged locust, evidently with the intention of finding out where the eggs were to be deposited. The joints of the palpi could not be counted, and I do not feel certain that the insect belongs in this genus.

SCELIO Latreille.

Hist. Nat., XIII, p. 226, (1806); Förster Hym. Stud., II, p. 102.

Caloptenobia Riley, First Rep. U. S. Ent. Comm., p. 306.

(Type *S. rugulosus* Latr.).

Head transverse, or subquadrate, the vertex broad, the occiput somewhat excavated and rounded; ocelli 3, in a triangle, the lateral being close to the eye; eyes oval or ovate.

Antennæ inserted close to the clypeus, in ♀ short, fusiform, subcompressed, 12-jointed, the 6 terminal joints forming a large club, the funicular joints moniliform; in ♂ 10-jointed, short, subclavate, the joints short, submoniliform.

Maxillary palpi very short, inconspicuous, 3-jointed; labial palpi 3-jointed.

Mandibles long, arcuate, bidentate, the teeth subequal.

Thorax ovoid, the prothorax visible from above only at the dilated sides; mesonotum subconvex, broad, usually without furrows, rarely with distinct furrows; scutellum semicircular; metathorax short with the hind angles acute.

Front wings with the submarginal vein remote from the costal edge and terminating in a stigma, with or without a stigmal vein; sometimes there issues from the tip of the stigmal vein another delicate nervure that extends forward and forms a long, narrow, open marginal cell.

Abdomen sessile, long-ovate, or fusiform, depressed, the sides acutely margined, in ♀ 6, in ♂ 7 jointed.

The segments after the first, which is short and campanulate, nearly of an equal length, the third usually the longest.

Legs of moderate length; all femora and anterior tibiæ clavate, middle and posterior tibiæ subclavate; the tibial spurs 1, 1, 1, distinct; basal joint of hind tarsi not more than thrice as long as the second; claws simple.

The peculiar venation, the short, 3-jointed maxillary palpi, the short, fusiform, subcompressed antennæ, and the male having but 10-jointed antennæ readily distinguish the genus.

The parasitism of several of the species is known, and all are parasites in locust eggs, belonging to the family Acridiidae.

Some of the species bear a remarkably close resemblance to the Eurytominae in the family Chalcididae; and, this remarkable mimicry caused Dr. Riley to erect a new genus, *Caloptenobia*, in that family for the reception of a species of *Scelio*, reared by Mr. Samuel H. Scudder from the eggs of a locust found in Massachusetts.

TABLE OF SPECIES.

- Species with parapsidal furrows more or less distinct..... 3
 Species without parapsidal furrows, coarsely reticulately rugose.
- Coxæ and legs pale brownish-yellow..... 2
 Coxæ black or brown-black; rest of legs brownish-yellow.
 Wings fuscous with a stigmal vein and a radius.
 Scape and pedicel brownish-yellow, the flagellum brown-black; tegulæ rufous.
S. FUSCIPENNIS Ashm.
- Wings hyaline; no stigmal vein and radius.
 ♀ with the scape beneath pale; pedicel $\frac{1}{2}$ longer than the first flagellar joint; second, third, and fourth flagellar joints very short transverse, the third a little the longest, $2\frac{1}{2}$ times wider than long.
 ♂ with the scape dark brown, flagellar joints, except first and last, about equal in length and width, the third scarcely wider than the fourth.
S. HYALINIPENNIS Ashm.
2. Stigma with a stigmal vein.
 Scape and pedicel yellowish, the flagellum brown-black, the first flagellar joint shorter than the pedicel.
 Venter distinctly, coarsely striate, but not punctured ♀; venter with oblong punctures, the surface aciculated, antennæ pale brownish, the third flagellar joint much wider than the others ♂...S. OVIVORUS Riley.
- Stigma without a stigmal vein.
 ♀ unknown. ♂ with the third flagellar joint wider than either the second or fourth; venter distinctly striated.
 Antennæ brown-black; scape brownish-yellow; wings hyaline.
S. PALLIDIPES, sp. nov.
- Antennæ wholly brownish-yellow; wings subfuscous...S. PALLIDICORNIS, sp. nov.
3. Coxæ dark brown or black; rest of legs brownish-yellow.
 Wings hyaline; no stigmal vein.
 Scape and pedicel brownish-yellow.....S. GEDIPODÆ, sp. nov.
 Antennæ wholly brown-black.....S. OPACUS Prov.
- Coxæ and legs pale brownish-yellow.
 Wings hyaline or but slightly tinged.
 Stigma without a stigmal vein; scape and pedicel, and sometimes the first two or three flagellar joints pale.
 Abdomen mostly rufous.....S. RUFIVENTRIS, sp. nov.
 Abdomen black, the venter piceous.....S. CALOPTENI Riley.
- Stigma with a short stigmal vein; scape alone pale, although the pedicel and the first flagellar joint are sometimes pale beneath.
 ♀ postscutellum striate; abdomen delicately longitudinally striated, the extreme apex of the segments smooth polished; angles of metathorax on a line with the apex of the metonotum.....S. LUGGERI Riley.
 ♀ postscutellum punctate; abdomen longitudinally lineated, the venter, except first and second segments, smooth; angles of metathorax rather prominent, covered with a white pubescence...S. FLORIDANUS, sp. nov.

Scelio fuscipennis Ashm.

Ent. Am., III, p. 119; Cress. Syn. Hym., p. 314.

♂ ♀. Length, 3.5 to 5.3^{mm}. Black, coarsely rugose, the parapsidal furrows not at all indicated; scape, pedicel and legs, except the coxæ, brownish-yellow or reddish-yellow; wings fuscous, paler at base, the stigmal vein distinct with a long branch forming a marginal cell.

HABITAT.—Jacksonville and Fort George Island, Fla.

Types in Coll. Ashmead.

Common. I think this species will prove to be a parasite in the eggs of *Dictyopterus micropterus*.

Scelio hyalinipennis Ashm.

(Pl. x, Fig. 9, ♀.)

Ent. Am., III, p. 119; Cress. Syn. Hym., p. 314.

♂ ♀. Length, 4 to 4.5^{mm}. Black, coarsely rugoso-punctate, the mesonotum without trace of furrows; face striate above insertion of antennæ and below the eyes. Mandibles, scape, and pedicel beneath in ♀, and legs, rufous, or brownish-yellow; coxæ in ♂ black, frequently pale in ♀, or only dusky or blackish basally. Antennæ 12-jointed, brown-black, except as mentioned above, the flagellum fusiform, depressed, the pedicel about one-third longer than the first joint, the second, third, and fourth joints very transverse, 3 times as wide as long; in ♂ 10-jointed, flagellar joints 2 to 7, about of an equal length, scarcely twice as wide as long, the third but little wider than the fourth. Wings clear hyaline, with only a trace of the submarginal vein; stigma present, the submarginal nervure before reaching it obsolete or subobsolete, hyaline; no trace of a stigmal nervure. Abdomen imbricato-rugose, venter in ♀ often rufous.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead and in National Museum.

Scelio ovivorus Riley.

Caloptenobia ovirora Riley, First Rep. U. S. Ent. Comm., p. 306.

Scelio famelicus Riley, nec. Say. Second Rep. U. S. Ent. Comm., p. 270.

Scelio ovivora Ashm., Ent. Am., III, p. 119.

♀. Length, 4.20^{mm}. Black, very coarsely rugoso-punctate, the mesonotum without furrows; there is a large polished space on face above the antennæ, and on either side coarse striæ converge toward the mandibles; mandibles pale rufous. Antennæ 12-jointed, brown-black, the scape and pedicel pale rufous or brownish-yellow; pedicel very slightly longer than first funicular joint. The thorax is very coarsely rugose, the large punctures confluent; scutellum coarsely rugoso-punctate; meta-thorax with a finer sculpture, the angles dilated, prominent acute. Tegulæ yellowish. Wings subfuscous, the stigma of the submarginal vein large with a stigmal vein and a ray from its tip. Legs, including all coxæ, pale yellowish. Abdomen fusiform, the dorsum and venter

coarsely longitudinally striated; the first segment is short, transverse, very little longer than half the length of the second; the third, the longest, the fourth, a little shorter than the third; the fifth, about as long as the second; the sixth, shorter.

♂. Length, 3.6^{mm}. Head and thorax coarsely rugose, the latter without furrows; antennæ pale brown, 10-jointed, the third flagellar joint longer and wider than the others; legs brownish-yellow; wings hyaline, the submarginal vein terminating in a rounded stigma with a short stigmal vein; abdomen distinctly striated, the apical edges of the segments smooth, impunctate.

HABITAT.—Massachusetts.

Types in National Museum.

Described from 3 ♀ specimens, now in poor condition, reared by Samuel H. Scudder from the eggs of *Dissosteira carolina*.

Scelio pallidipes, sp. nov.

♂. Length, 3.2^{mm}. Head and thorax coarsely rugose, the latter without parapsidal furrows. Antennæ brown-black, scape brownish, the third flagellar joint much wider than the others, twice as wide as long. Angles of metathorax rounded, not prominent. Wings clear-hyaline, the submarginal vein and the stigma hyaline, scarcely apparent; no stigmal vein. Legs wholly brownish-yellow. Abdomen striated, the first segment quadrate, separated from the second by a strong constriction; venter distinctly, but not coarsely, striated.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

The wholly brown-black flagellum and the difference in the metathoracic angles separate the species from *S. pallidicornis*, the only species with which it would be apt to be confused.

Scelio pallidicornis, sp. nov.

♂. Length, 4.1^{mm}. Black, coarsely rugose; antennæ pale or brownish-yellow, the pedicel shorter than the first flagellar joint, the latter obconical and the longest joint; the third joint the widest, about 1½ times as wide as long, or only slightly wider than the following joints. Angles of metathorax somewhat prominent, covered with a whitish pubescence. Wings subfuscous, hyaline at base, the stigma without a stigmal vein. Legs wholly brownish-yellow. Abdomen above coarsely striated, and with dilated punctures; beneath smoother, shining, but longitudinally striated, the striæ faint or indistinct beneath the lateral carina.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

The large size, pale antennæ, and color of wings at once separate the species from the others described here.

Scelio oedipodæ, sp. nov.

♂ ♀. Length, 3.5 to 4^{mm}. Black, rugose; scape, pedicel, and legs, except the coxæ, brownish-yellow; thorax with parapsidal furrows distinct, in female wanting anteriorly; tegulæ piceous; wings hyaline, the stigma reaching the costa; the stigmal vein wanting, or only slightly developed; metathorax truncate behind, the angles straight, not prominent; abdomen longer than the head and thorax united, striated; first segment well separated from the second by a strong constriction, twice as wide as long.

The antennæ in the male are brownish, the face vertically striated, the femora brownish, the tibiæ and tarsi yellowish.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Described from 1 ♂ and 2 ♀ specimens, reared from the eggs of a species of *Oedipoda*. The black coxæ and the distinct parapsidal furrows at once separate the species from *Scelio ovivorus* Riley, and the grooved mesonotum from *S. hyalinipennis* Ashm., the rugosities being finer than in either of these species.

Scelio opacus Prov.

Acerota opaca Prov., Add. et Corr., p. 184; Cress. Syn., p. 249.

♀. Length, 3.25^{mm}. Black, opaque, with the feet red, more or less dusky. Head and thorax rugoso-punctate, the abdomen with the disks of the segments longitudinally aciculated. Wings hyaline. Abdomen sessile, the first segment being much narrower than the others. (*Prov.*)

HABITAT.—Cap Rouge.

Type in Coll. Provancher.

Unknown to me.

[Since this was written a male *Scelio*, labeled "*Acerota opaca*, Type, Provancher", has been deposited in the National Museum by D. W. Coquillett, of Los Angeles, Cal., and I have in consequence merely removed Provancher's brief description from the genus *Acerota*, in the subfamily *Platygasterinæ*, to its proper place in *Scelio*, having had no time to draw up a full description.]

Scelio rufiventris, sp. nov.

♀. Length, 3.5^{mm}. Brown-black, rugose, the abdomen mostly rufous, fuscous above, except along the sides; scape, pedicel, first funicular joint, and the legs pale rufous. Thorax with distinct parapsidal furrows. Tegulæ black. Wings hyaline, the stigma without a stigmal nervure. Funicular joints after the first very transverse, three times as wide as long, the pedicel being as long as the first, second, and third funicular joints united. Abdomen pointed-fusiform, longer than the head and

thorax together, shagreened, not distinctly striated, the venter smooth, wholly rufous; dorsum with a rufous streak along the margins.

HABITAT.—Fort George, Fla.

Type in Coll. Ashmead.

Described from a single specimen taken by Dr. R. S. Turner, in August, 1882.

The color and sculpture of abdomen sufficiently distinguish the species.

Scelio calopteni sp. nov., Riley.

"♀. Length, 3 to 3.4^{mm}. Black, rugose; the mesonotum with faint but distinct furrows. Head with a smooth, shining space on face above the antennæ, with striæ on each side converging toward mouth; mandibles pale rufous; antennæ 12-jointed, brown-black, the scape and pedicel yellow; pedicel longer than the first funicular joint, the joints after the first very transverse; club slightly compressed from above, the joints closely conjoined. Thorax with the tegulæ pale rufous; wings hyaline, the submarginal vein ending in a rounded stigma, but without a stigmal vein; legs, including the coxæ, pale brownish-yellow. Metanotum with 2 complete longitudinal subparallel median carinæ. Abdomen fusiform, longer than the head and thorax together, closely, longitudinally aciculate; the venter piceous, finely aciculate at sides.

"Described from many ♀ specimens, bred June 27 and July 3, 1883, from the eggs of *Caloptenus atlantis*, collected by self and A. Koebele in New Hampshire."—[From Riley's MS.]

HABITAT.—Boscawen, N. H.

Types in National Museum.

This species is closely allied to *S. Luggeri*, and may be but a variety; but as the stigma is without a stigmal vein and the color of the antennæ is slightly different, I believe it to be a distinct species.

Scelio Luggeri sp. nov., Riley.

"♀. Length, 3 to 3.2^{mm}. Black, rugose, the mesonotum with two furrows; scape and legs, including coxæ, brownish-yellow. Head with the antennæ brown-black, the pedicel distinctly longer than the first flagellar joint, joints 2 to 4 very short, transverse. Metanotum with 4 complete longitudinal median carinæ; wings subfuscous, paler at base, the stigma with a short stigmal vein. Abdomen fusiform, about one-third longer than the head and thorax together; longitudinally aciculate, the apex of all the segments with a smooth, polished space; venter black, aciculate over entire surface.

"Described from three ♀ specimens, reared in July, 1889, from the eggs of a *Caloptenus* sp. by Prof. O. Lugger."—[From Riley's MS.]

HABITAT.—Otter Tail County, Minn.

Types in National Museum.

Scelio floridanus, sp. nov.

♀. Length, 3 to $3\frac{1}{2}$ mm. Densely black, subopaque, with rather coarse reticulated punctures, the thorax with distinct furrows, the postscutellum highly ridged. Antennæ brown-black, the scape, legs, and mandibles, yellow; funicular joints transverse, the club large fusiform, wider than long; angles of metathorax prominent. Wings subhyaline, the venation yellowish, the submarginal vein ending in a slight stigma and an oblique stigmal vein, the latter with an indistinct radius. Abdomen fusiform, lineatedly rugose; first segment transverse-quadrate of an equal length with the fifth, the second, longer, the third, the longest segment, the fourth shorter than third, the sixth, subequal with the fifth, the seventh much shorter; the venter polished, the segments striated towards apex.

HABITAT.—Haw Creek and Jacksonville, Fla.

Types in National Museum and Coll. Ashmead.

Subfamily VI.—PLATYGASTERINÆ.

Head transverse, rarely quadrate. Ocelli 3, triangularly arranged. Mandibles bifid at tips. Maxillary palpi 2-jointed; labial palpi 1-jointed. Antennæ elbowed, clavate, most frequently 10-jointed in both sexes, rarely 8 or 9-jointed, inserted at the base of the clypeus. Pronotum never very large, scarcely visible from above, mesonotum most frequently transverse, with or without furrows; scutellum variously shaped, often with an awl-shaped tip or spined, flat, semicircular or pillow-shaped; metathorax short, with a median sulcus. Front wings most frequently entirely veinless, or with a submarginal vein terminating in a stigma before attaining the costa, the basal nervure rarely present; hind wings lanceolate, veinless. Abdomen petiolate or subpetiolate, ovate, oblong-oval or conic-ovate, depressed, very rarely greatly elongate, usually composed of 6 visible segments and always carinated at the sides, the second segment the longest. Legs long, the femora and tibiæ clavate, the tibial spurs 1, 1, 1, the tarsi, except in a single genus, *Iphetrachelus*, 5-jointed, the claws simple.

A very large and extensive group, at one time classified with the *Scelioninæ*, but readily distinguished by the 10-jointed clavate antennæ, the 2-jointed maxillary palpi, 1-jointed labial palpi, and the bifid mandibles; the wings, except in a few genera, being entirely veinless and wholly different from the *Scelioninæ*.

The group is divided into numerous genera, the species of which confine their attacks almost exclusively to the Dipterous families Cecidomyiidae and Tipulidae, the only records conflicting being two recorded by Ratzeburg. *Platygaster contorticornis* Ratzb. is said to have been bred from *Tortrix strobilana* and *P. mucronatus* Ratzb. from *Tortrix resinana*.

From our present extensive knowledge of the rearings of the Platygasterids it is, however, quite evident that these records are erroneous and these Tortricids must have been accompanied by Dipterous larvæ overlooked by Ratzeburg.

My *Platygaster aphidis* is recorded from an Aphis on *Chenopodium album*, but we know now that some Aphides are parasitized by Cecidomyiids and this apparent discrepancy is thus explained. The species is unquestionably a secondary parasite on some Cecidomyiid infesting or living with the Aphid.

The genus *Amitus* Haldeman (= *Zacrita* Förster) is, however, apparently a primary parasite on the *Aleyrodidae* a family of Homopterous insects allied to the *Coccidae*, unless the *Aleyrodidae* have Dipterous parasites not yet discovered.

The Platygasterinæ may be divided into two tribes as follows:

- Anterior wing with a distinct clavate submarginal vein.... Tribe I.—INOSTEMMINI.
Anterior wing entirely veinless, rarely with indications of a submarginal vein, if present very short, faint, and never clavate..... Tribe II.—PLATYGASTERINI.

TRIBE I.—INOSTEMMINI.

In this tribe but seven genera are known, all represented in our fauna, and distinguished by the aid of the following table.

TABLE OF GENERA.

FEMALES.

- Tarsi 5-jointed 2
Tarsi 4-jointed, antennæ 8-jointed..... *IPHETRACHELUS* Hal.
2. Antennæ 10-jointed..... 3
Antennæ 9-jointed..... *ALLOTROPA* Förster.
3. Wings without basal and median veins..... 4
Wings with basal and median veins.
Mesonotum with faint or distinct furrows.
Antennal club 3-jointed..... *METACLISIS* Förster.
Antennal club 4-jointed *MONOCRITA* Förster.
4. Lateral ocelli nearer the apical ocellus than to the inner margin of eye.
Mesonotum without or with delicate furrows; antennal club 4-jointed.
ISOSTASIUS Förster.
Lateral ocelli nearer the inner margin of eye than to the apical ocellus.
First abdominal segment with a horn; mesonotum with faint furrows.
INOSTEMMA Hal.
First abdominal segment without a horn; mesonotum with distinct furrows;
antennal club 4-jointed, the funicular joints slender, cylindric.
ACEROA Förster.

MALES.

- Tarsi 5-jointed..... 2
Tarsi 4-jointed; mesonotal furrows distinct; antennæ 10-jointed, with whorled hairs..... *IPHETRACHELUS* Hal.
2. Antennæ 10-jointed..... 3
Antennæ 9-jointed, with whorled hairs..... *ALLOTROPA* Förster.

3. Wings without basal and median veins 4
Wings with basal and median veins.
Mesonotum with 2 faint furrows.
Antennæ subclavate moniliform, first funicular joint very minute,
second somewhat larger, the following to 10th larger, gradu-
ally thickened, the last larger, conical METACALIS Förster.
Antennæ submoniliform, first funicular joint very minute, second
larger, thickened, curved, the third small, triangular, the fol-
lowing except the last transverse moniliform, the last conical.
MONOCRITA Förster.
4. Lateral ocelli nearer the apical ocellus than to the margin of eye.
Mesonotum without furrows ISOSTASIUS, Förster.
Lateral ocelli nearer the margin of eye than to the apical ocellus.
Mesonotum with faint furrows; antennæ moniliform, pubescent, the first
two funicular joints nearly equal, the second somewhat curved,
the third small, triangular, the four following moniliform,
the last conical INOSTEMMA Hal.
Mesonotum with 2 distinct furrows; antennæ filiform, pubescent, the
second funicular joint long, cylindrical, longer than the first,
the third shorter than the first, the following oval, the last
about thrice as long as thick ACEROTA Förster.

IPHETRACHELUS Haliday.

Ent. Mag., III, p. 273 (1836); **Förster Hym. Stud.**, II, p. 106 (1856).

(Type, *I. lar* Hal.).

Head transverse, the frons subconvex, smooth; ocelli 3 in a triangle, the lateral close to the margin of the eye; eyes rounded.

Antennæ inserted just above the clypeus, in ♀ 10-jointed, very long, the terminal joints forming a club; scape long, subclavate, funicular joints small, moniliform; in ♂ 9-jointed, the flagellar joints nodose-pedicellate, with whorls of sparse long hairs.

Maxillary palpi short, 2-jointed; labial palpi 1-jointed.

Mandibles bifid at tips.

Thorax oval, the prothorax slightly visible from above; mesonotum with or without furrows; scutellum gibbous, nearly round; metathorax short, rounded behind.

Front wings ciliated, the submarginal vein ending in a knob a little before the middle of the wing.

Abdomen long ovate, sessile, subconvex, and narrower than the thorax, the second segment very large, occupying most of the surface, the following segments all short.

Legs slender, the femora subelavate, the tarsi 4-jointed, the basal joint of hind tarsi about as long as all the others together.

The 4-jointed tarsi, and the 9-jointed, nodose-pedicellate antennæ of the male readily distinguish the genus.

Iphetrachelus americanus Ashm

(Pl. XI, Fig. 1, ♂.)

Proc. Ent. Soc. Wash., 11, p. 58, 1890.

♂. Length, 0.6^{mm}. Black, shining, delicately microscopically punctate and faintly sericeous.

Antennæ and legs uniformly yellow. Antennæ nodose-pedicellate, with whorls of long hairs; pedicel rounded; second funicular joint triangular. Thorax somewhat flattened on the disk, without distinct furrows, although there are two shallow longitudinal furrows on the shoulders. Scutellum semicircular, subconvex, separated from the mesonotum by a delicate transverse grooved line. Tegulae yellow. Wings hyaline, with a long fringe at apex, the submarginal vein pale yellow, knobbed at tip. Abdomen long, oval, smooth, polished and black, except the first segment, which is yellow.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen, taken by sweeping.

ALLOTROPA Förster.

Hym. Stud., 11, p. 106 (1856).

(Type *A. necrida* Walk.)

Head transverse; ocelli 3, the lateral rather close to the margin of the eye.

Antennæ inserted just above the clypeus, 9-jointed in both sexes, the flagellar joints in ♂ dentate, verticillate; scape stout, fusiform, pedicel small, globose, in ♀ clavate, ending in a 4-jointed club.

Maxillary palpi 2-jointed; labial palpi 1-jointed.

Thorax ovoid, the mesonotum with 2 faint furrows; scutellum short, semicircular; metathorax short, the posterior angles subacute.

Front wings pubescent, the submarginal vein short, ending in a knob.

Abdomen long-ovate, convex, narrower than the thorax, the first segment short, broad, the second large, the following very short.

Legs moderate, the femora clavate, tibiae and tarsi slender.

This genus is distinguished at once from all the other genera in having 9-jointed antennæ in both sexes.

Allotropa americana Ashm.

(Pl. XI, Fig. 2, ♀.)

Can. Ent., XIX, p. 125; Cress. Syn. Hym., p. 248.

♀. Length 1.4^{mm}. Black, closely minutely punctulate; head transverse, opaque, the lateral ocelli twice their width from the margin of the eye; mandibles rufous; antennæ 9-jointed, ending in a 4-jointed club, the joints serrate toward one side; scape rufous; pedicel and

flagellum dark brown; first and second funicular joint about equal, the third triangular or subtriangular. Thorax microscopically punctate, but shining in the middle, the mesonotum with two distinct furrows; scutellum finely punctulate, opaque, with an elevated margin behind. Tegulæ black. Wings hyaline, the submarginal vein knobbed. Legs reddish-yellow, the coxæ dusky. Abdomen oblong-oval, shining, the petiole and second segment at base striated along the sides, minutely punctulate, above smooth, shining, the following segments subopaque, very finely punctulate.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

METACLISIS Förster.

Hym. Stud., II, p. 106 (1856).

(Type *M. areolata* Hal.)

Head transverse, broader than the thorax; ocelli 3, in a triangle, the lateral ocelli about twice their width from the margin of the eye; eyes rounded.

Antennæ inserted just above the clypeus, 10-jointed in both sexes; in the ♀ not half the length of the body, ending in a 3-jointed club; funicular joints very small, transverse; club joints large, broad, the last conical, somewhat larger than the penultimate; in ♂ moniliform, incrassated toward apex and longer than half the length of body; first flagellar joint minute; fourth, moderate, fifth, and following to the ninth, larger and broader, tenth, conical, much longer than the penultimate.

Thorax short, ovate, finely scaly; pronotum short, scarcely visible from above; mesonotum with indistinct furrows; scutellum small, flattened, semicircular; metathorax moderate.

Front wings with the submarginal vein terminating in a stigma, the basal nervure distinct, and with a basal cell.

Abdomen ovate or oval, twice the length of the thorax, the apex pointed, stylus-like in ♀; first segment very short; second very large; third, fourth and fifth short, about equal; fifth about as long as segments 3 4 and 5 united; sixth shorter; in ♂ the abdomen is scarcely longer than the thorax.

Legs clavate.

This genus and *Monocrita* Förster are the only genera in the family having a distinct basal nervure, which alone is sufficient to distinguish them from all others. The female in *Metaclisis* is separated from *Monocrita* by having a 3-jointed antennal club, the male by the smaller second funicular joint.

But two species have been described.

***Metaclisia belonocnemæ* Ashm.**

(Pl. XI, Fig. 3, ♀.)

Can. Ent., XIX, p. 125 ♀.—Cress. Syn. Hym., p. 248.

♀. Length, 1.5^{mm}. Black, opaque, closely, finely punctate. Legs and antennæ, except the club, pale brownish yellow; club brown-black. Antennæ 10-jointed, the scape thick, clavate; pedicel longer and thicker than the first funicular joint; first and second funicular joints cylindric, equal or nearly so, the first very slightly the longer; third and fourth very minute transverse; club 4-jointed, the joints, except the last, transverse, the last conical, longer than the preceding. Parapsidal furrows distinct. Scutellum convex with a carina around the posterior margin. Tegulæ dark brown. Wings, hyaline, the submarginal vein yellowish.

Abdomen oval, as long as the thorax, smooth, shining, except the first segment, which is a little roughened from some striæ.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

This species was reared by myself from a Cynipid gall, *Belonocnema treata* Mayr, and it is undoubtedly parasitic on a Cecidomyiid inhabiting the gall.

***Metaclisia erythropus*, Ashm.**

Can. Ent., XX, p. 51.

♂. Length, 2.5^{mm}. Black; head opaque, coarsely rugose on the vertex and cheeks; face transversely aciculated, with a central depressed line extending forward from the middle ocellus. Antennæ 10-jointed, black; pedicel as long as the second funicular joint; first funicular joint small, second swollen; club 6-jointed, the joints longer than wide, subpedicellate, hairy, the last joint conical, longer than the preceding. Thorax finely reticulated, or scaly; parapsidal grooves distinct, converging and meeting at the base of the scutellum. Metathorax covered with a sericeous pubescence. Legs rufous, the coxæ black. Abdomen black, polished. Wings subhyaline (probably tinged from the cyanide bottle), faintly pubescent, the tegulæ rufo-piceous.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

MONOCRITA Förster.

Hym. Stud., II, p. 106 (1856)

(Type *M. alinas* Walk.)

Head transverse, wider than the thorax; ocelli 3, in a triangle, the lateral as far from the front ocellus as to the eye margin.

Antennæ inserted just above the clypeus, 10-jointed in both sexes,

in ♀ terminating in a 4-jointed club, the scape slender, pedicel cyathiform, first funicular joint small; in ♂ with a 6-jointed filiform club, the joints slightly pedicellate, oval, the last long conical; the first funicular joint about twice as long as thick, the second stouter, obliquely truncate at tip and curved.

Thorax short, ovoid, convex; prothorax very short; mesonotum with distinct but delicate furrows; scutellum convex; metathorax short.

Front wings pubescent, ciliated, the submarginal vein ending in a knob, the basal nervure distinct, and with a distinct basal cell.

Abdomen ovate, convex, slightly shorter and narrower than the thorax; first segment small, the second very large, the third and following very short.

Legs clavate, the tibial spurs weak, the basal joint of hind tarsi twice the length of the second.

The two species in our fauna may be thus distinguished:

Legs black, the head and thorax microscopically shagreened.

First and second abdominal segments not striated, the latter hairy at base.

M. NIGRIPES Ashm.

Legs brownish-yellow, the head and thorax smooth, impunctured.

First abdominal segment and the second at base striated, not hairy.

M. CARINATA, sp. nov.

***Monocrita nigripes* Ashm.**

Bull. No. 1, Col. Biol. Assoc., p. 8, 1890.

♂. Length, 1.80^{mm}. Black, subopaque, with a fine, granulated, or shagreened sculpture; the face above the insertion of the antennæ with some transverse aciculations. Antennæ 10-jointed, black, the flagellum about twice the length of the scape, pedicel twice as long as thick, narrowed at base, the second joint minute, the third, slightly swollen outwardly, the following joints very slightly longer than wide, truncate at tips and rounded off at base, or cup-shaped, connected by a very short pedicel. Parapsidal grooves distinct, converging and almost meeting posteriorly. Scutellum high convex, with a deep, transverse depression across the base. Mesopleura smooth, polished, with a curved impression across the disk; metapleura densely covered with a griseous pubescence; the metathorax and petiole more sparsely pubescent. Legs black, the knees slightly, anterior legs beneath, and all the tarsi, more or less piceous, or reddish. Abdomen highly polished, oblong-oval, as long as the head and thorax together, the petiole not longer than wide, the second segment occupying fully three-fourths of its length, smooth, the following segments exceedingly short and about equal in length. Wings hyaline, pubescent, the submarginal and basal veins distinct, the former knobbed at tip.

HABITAT.—Greeley, Colo.

Type in Coll. Ashmead.

Nothing is known of the habits of this species, which was obtained from H. F. Wickham.

Monocrita carinata, sp. nov.

(Pl. XI, Fig. 4, ♀.)

♀. Length, 1.20^{mm}. Black, shining, subpubescent; head transverse, the face with a central longitudinal carina extending from the front ocellus to between the base of antennæ. Antennæ 10-jointed, the scape yellow, the flagellum brown and twice the length of the scape; pedicel long-oval; joint 1 of funicle small, the second enlarged; club 6-jointed, the joints, except the last transverse-quadrate, the last cone-shaped, slightly more than twice as long as the penultimate. Thorax with the parapsidal furrows delicately impressed posteriorly, obsolete anteriorly. Scutellum convex, smooth, with a carina surrounding the hind margin. Legs brownish-yellow, the femora and tibiæ very slightly embrowned, the coxæ black. Tegulæ piceous-black. Wings subhyaline, pubescent, the submarginal vein brown, ending in a large rounded knob and with a distinct basal nervure. Abdomen oval, smooth, shining, the first segment and the second at base, striated.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen, captured by Mr. E. A. Schwarz, May 5, 1890.

ISOSTASIUS Förster.

(Type *Platygaster punctiger* Nees).

Hym. Stud., II, p. 106 (1856).

Head transverse, vertex subconvex, occiput not margined; ocelli 3, in a triangle, rather close together, the lateral distant from the margin of the eye; eyes oval. Antennæ inserted just above the clypeus, 10-jointed in both sexes, in the ♀ the 4 terminal joints forming a large club, the last joint of which is the largest; pedicel cyathiform, much larger than the first funicular joint; the four funicular joints are all small, moniliform; in ♂ with a 5-jointed club.

Thorax ovoid, the prothorax visible from above, rounded before; mesonotum smooth or punctate, with or without furrows; the scutellum rather high, cushion-shaped or convex, separated at base from the mesonotum by a deep transverse furrow; metathorax very short.

Front wings with the submarginal vein terminating in a small knob before reaching half the length of the wing.

Abdomen in ♀ conical-ovate, 6-jointed; in ♂ oval, 7-jointed, the basal segment short, broader than long, the second very long and occupying fully two-thirds of the whole surface, the following very short.

Legs clavate, the tibial spurs 1, 1, 1, the tarsi 5-jointed, the basal joint of posterior tarsi 2½ times as long as the second, or less than thrice as long, 2 to 4 subequal, the last a little longer than the second.

Isostasius musculus Ashm.

(Pl. XI, Fig. 5, ♀.)

Can. Ent., XIX, p. 126; Cress. Syn. Hym., p. 249.

♀. Length, 1.20^{mm}. Black, shining; head transverse, closely, finely, microscopically punctate and subopaque, the lateral ocelli nearer to the front ocellus than to the margin of the eye. Antennæ 10-jointed, piceous, or dark brown, the scape clavate, the pedicel longer and thicker than the first two funicular joints, the first and second funicular joints cylindric, nearly equal, the third and fourth small, transverse; club enlarged, 4-jointed, the joints quadrate. Thorax with scarcely a trace of furrows. Scutellum transverse, convex. Mesopleura aciculated. Legs brown, the coxæ black, the trochanters, base and apex of femora, and tibiæ and all tarsi honey-yellow. Tegulæ black. Wings hyaline, the submarginal vein terminating in a small, black knob. Abdomen pointed-ovate, polished, black, the basal segment rugose.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Isostasius fuscipennis, sp. nov.

♀. Length, 1^{mm}. Black, shining; head anteriorly faintly shagreened, posteriorly transversely aciculated, the lateral ocelli about twice their width from the margin of the eye. Antennæ brown-black. Thorax polished, with faint traces of furrows only posteriorly, the base of the middle lobe thus formed projecting slightly upon the scutellum; mesopleura polished, impunctured, metapleura subopaque, shagreened; scutellum convex, shining, margined posteriorly with a fine whitish pubescence. Tegulæ black. Wings fuscous. Legs piceous, the anterior femora, tibiæ, and tarsi, yellowish; middle and hind tarsi, pale rufous.

Abdomen as long as the head and thorax, polished, the first segment striated, the second, at base sulcate.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen, collected by Mr. E. A. Schwarz.

Isostasius arietinus Prov.

Add. et Corr., p. 183.

Bæoneura arietina, Prov., Add. et Corr., p. 403.

♀. Long. 11 pce. Noir, avec la bouche, le scape des antennes et les pattes, d'un beau jaune-miel. Tête aussi large que le thorax, à antennes fortes, le scape fort, arqué, jaune ainsi que l'article qui le suit, le reste formant une forte massue brune recourbée en corne de bélier. Mesonotum avec 3 sillons bien distincts. Ailes hyalines, avec la sous-marginale brune se terminant dans un stigma grand et épaissi qui donne naissance à un radius se dirigeant vers le sommet de l'aile. Pattes jaunes, hanches noires. Abdomen sessile, poli, brillant, droit, tarière non sortante. La tête et le thorax sont très finement ponctués et les 2 ocelles basilaires sont plus rapprochés de l'apical que du coin interne des yeux. (*Provancher.*)

HABITAT.—Cap-Rouge, Canada.

Unknown to me.

INOSTEMMA Haliday.

Ent. Mag., 1, p. 270 (1833); Förster, Hym. Stud., II, p. 107 (1856).

(Type *I. Boscii* Jurine.)

Head transverse, the frons convex, the occiput often impressed, rarely distinctly margined; ocelli 3 in a triangle, the lateral being nearer to the margin of the eye than to the front ocellus; eyes rounded.

Antennæ inserted just above the clypeus, 10-jointed, the scape clavate, in the ♀ terminating in a 4-jointed club, in ♂ with a 5-jointed club, the last funicular joint very minute.

Thorax ovate, the mesonotum with 2 delicate impressed lines, often obsolete anteriorly; the scutellum semicircular, subconvex, separated from the mesonotum by a straight impressed line; the metathorax short, sloping, unarmed.

Front wings with the submarginal vein abruptly terminating in a stigma before attaining the middle of the wing.

Abdomen in ♀ pointed-ovate, subcompressed below, 6-jointed, the first segment always with a horn extending forward over the thorax, the second very long, the following very short, about equal in length; in ♂ shorter, oblong oval, with the tip rounded, 7-jointed.

Legs clavate, the tibial spurs 1, 1, 1, the basal joint of posterior tarsi about three times as long as the second, 2 to 4 subequal, the last as long as the second.

The horn-like structure at the base of the abdomen renders the females in this genus easy of recognition, while in the males the position of the ocelli and the antennæ must be carefully examined or they will be apt to be confused with those in closely allied genera.

TABLE OF SPECIES.

FEMALES.

Head finely microscopically punctate, the thorax smooth, shining..... 2

Head and thorax punctulate or shagreened, subopaque.

Vertex impressed at the middle, frons with a median furrow.

Antennæ wholly black.

All coxæ and femora black (femora sometimes piceous), tibiæ and tarsi yellowish or brownish-yellow.

Scapulæ with a distinct median impressed line; metapleura with silvery pubescence..... I. CRESSONI Ashm.

Scapulæ without an impressed line; tibiæ fuscous; metapleura sericeous
I. HORNII Ashm.

Vertex not impressed.

Scape yellow.

All coxæ black, club of femora fuscous, rest of the legs brownish-yellow.

Scapulæ without an impressed line, abdominal horn extending only to the middle of thorax I. PACKARDI Ashm.

2. Vertex not impressed in the middle, frons without a median furrow.

Antennæ brown-black.

Coxæ and legs dull rufous or piceous, trochanters, knees and tarsi pale.

Metapleura finely striated, subsericeous I. RILEYI Ashm.

Vertex impressed in the middle, frons with a medial furrow.

Coxæ black, legs dull rufous, base of tibiæ and tarsi yellow.

Metapleura very rough..... I. CALIFORNICA, sp. nov.

Metapleura smoother, but delicately punctate, with a deep sulcus.

I. LINTNERI, sp. nov.

Inostemma Cressoni Ashm.

(Pl. XI, Fig. 6, ♀.)

Can. Ent., XIX, p. 127; Cress. Syn. Hym., p. 249.

♀. Length, 2 to 2.2^{mm}. Black, subopaque, minutely punctulate or shagreened; head transverse, the vertex at the middle and posteriorly impressed, the face with a median depression above the insertion of the antennæ, the lateral ocelli touching the border of the eye. Antennæ black or brown-black, the extreme apex of the pedicel yellowish, first two funicular joints slender, cylindrical, the third and fourth small; club 4-jointed, the second and third a little longer than wide, the last conical. Thorax with delicate but complete parapsides, the middle lobe a little concave at the middle for the reception of the abdominal horn, the scapulæ with a longitudinal grooved line; mesopleura faintly aciculated, deeply foveated, the fovea extending from beneath the tegulæ to between the middle and hind coxæ, metapleura with a whitish or silvery pubescence. Legs black or piceous, the tibiæ and tarsi pale brown or yellowish. Wings hyaline, the tegulæ rufo-piceous. Abdomen polished, shining, longer than the head and thorax together, pointed and curving upward at tip, the horn long and extending forward over the thorax to the vertex of head, second ventral segment with 2 aciculated sulci at base.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Inostemma Horni Ashm.

Can. Ent., XIX, p. 126; Cress. Syn. Hym., p. 249.

♂ ♀. Length, 1 to 1.4^{mm}. Black, subopaque, closely, finely punctulate, the thorax above lustrous; head transverse, the vertex impressed deeply at the middle, the face with a median impressed line. Antennæ black, the pedicel and first two funicular joints a little pale at tip, subequal, the third and fourth, minute; club 4-jointed, the second and third joints a little wider than long. Thorax with complete parapsidal furrows, the scapulæ most frequently without a trace of an impressed line; mesopleura polished, foveated but not aciculated; metapleura pubescent. Legs black or piceous, the tarsi yellowish, the tibiæ paler basally; wings hyaline, the tegulæ black or piceous. Abdomen polished black, as long as the head and thorax together, the horn extending over the thorax to the vertex of head, finely, longitudinally aciculated and much thicker at tip than at base; first segment and second at base, striated.

In the ♂ the first and second funicular joints are about equal, oval, the third small, the club 5-jointed, pubescent, the joints, except the last, not longer than wide, slightly pedicellate; lateral ocelli about their width from the eye margin; while the second abdominal segment at base has two oblong, nearly confluent, finely punctate foveæ, the first segment with three grooved lines above.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from many specimens.

***Inostemma Packardii* Ashm.**

Can. Ent., XIX, p. 127; Cress. Syn. Hym., p. 249.

♀. Length, 1.4^{mm}. Black, subopaque, closely, finely punctulate or shagreened. Head transverse, the vertex not impressed, the lateral ocelli not touching the margin of the eye. Antennæ 10-jointed, brown-black, the scape yellowish, fuscous at the middle, the pedicel yellowish at tip; first two funicular joints about equal, shorter than the scape, third and fourth minute, club 4-jointed, stout. Thorax shining, the parapsidal furrows very indistinct anteriorly, the scapulæ without a distinct impressed line. Wings hyaline. Legs brownish-yellow, the coxæ black, the thickened part of femora fuscous. Abdomen not longer than the head and thorax together, the horn not extending much beyond the middle of the thorax, obliquely truncate at tip, basal segment and the second at extreme base finely striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen. The short abdominal horn and the lateral ocelli not touching the margin of the eye readily separate the species.

***Inostemma Rileyi* Ashm.**

Can. Ent., XIX, p. 127; Cress. Syn. Hym., p. 249.

♂ ♀. Length, 0.5 to 0.8^{mm}. Black, polished; the head finely microscopically punctate, but shining, the vertex not impressed at the middle; the frons convex without a median groove, the lateral ocelli not touching the margin of the eye. Antennæ 10-jointed, dark brown, the apex of pedicel yellowish; second funicular joint subequal with the first, very little longer than thick, third and fourth minute; club 4-jointed, stout, the joints, except the last, broader than long; in ♂ with a 5-jointed club, the joints a little longer than wide, slightly pedicellate, hairy, the last conical; funicular joints 1 and 2 very little longer than thick, the second obliquely truncate at tip, the third, small, subtriangular. Thorax with the parapsidal furrows indistinct or wanting, the scapulæ without a grooved line. Wings hyaline, the tegulæ piceous black. Legs brownish-piceous, the trochanters, base of tibiae, and tarsi yellowish. Abdomen not longer than the head and thorax together, the

horn not extending over the vertex of the head; first segment and the extreme base of second striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead and National Museum.

Described from many specimens.

Inostemma californica, sp. nov.

♂ ♀. Length, 1 to 1.6^{mm}. Black, subopaque, closely finely punctulate, the mesonotum less distinctly punctate, shining. Head transverse, the vertex at the middle posteriorly, impressed. Antennæ 10-jointed, black, the scape one-third shorter than the flagellum; pedicel longer than the first funicular joint, first funicular joint almost as long as the second and third together, second, third, and fourth joints all small, the last the smallest, club 4-jointed, the first the narrowest, second and third quadrate, the last conical, longer than the preceding. In ♂ the club is 5-jointed, the flagellum nearly twice as long as the scape, the pedicel as long as the first two funicular joints, the third being minute. Thorax with 2 faint furrows. Mesopleura with a deep, glabrous impression on the disk, extending to the middle coxæ. Metapleura finely rugose, with raised lines. Tegulæ rufo-piceous. Wings hyaline, not fringed, the submarginal vein with the knobbed tip, black. Legs piceous-black, the trochanters, anterior tibiæ beneath and at tips, base of middle and posterior tibiæ, and all tarsi pale brownish-yellow. Abdomen slightly longer than the head and thorax together, pointed fusiform, smooth and shining; the basal segment finely rugose, in ♀ with a large horn extending forward over the thorax to the vertex of head, finely longitudinally aciculated, and becoming distinctly striated at base; the second segment is long, slightly longer than the five following segments united, with a fovea and some faint striæ at base. In the ♂ the basal segment has no horn and is longitudinally striated.

HABITAT.—Los Angeles, Cal.

Types in National Musium.

Bred by A. Koebele, from a Cecidomyiid gall on *Telypodium integrifolium*.

Inostemma Lintneri, sp. nov.

♀. Length, 1^{mm}. Black, polished, the head subopaque, closely microscopically punctate, the vertex slightly impressed in the middle, the face with a median furrow, the lateral ocelli a little away from the margin of the eye. Antennæ 10-jointed, brown-black, the apex of pedicel yellowish; first funicular joint slender, more than twice longer than thick; second two-thirds the length of the first; third and fourth minute; club 4-jointed, the joints, except the last, a little wider than long. Thorax smooth, shining, with distinct furrows, the scapulæ with a faint trace of an impressed line; mesopleura polished foveated; metapleura finely delicately punctate with a deep sulcus. Wings hyaline.

***Metaolisia belonocneme* Ashm.**

(Pl. XI, Fig. 3, ♀.)

Can. Ent., XIX, p. 125 ♀.—Cress. Syn. Hym., p. 248.

♀. Length, 1.5^{mm}. Black, opaque, closely, finely punctate. Legs and antennæ, except the club, pale brownish yellow; club brown-black. Antennæ 10-jointed, the scape thick, clavate; pedicel longer and thicker than the first funicular joint; first and second funicular joints cylindric, equal or nearly so, the first very slightly the longer; third and fourth very minute transverse; club 4-jointed, the joints, except the last, transverse, the last conical, longer than the preceding. Parapsidal furrows distinct. Scutellum convex with a carina around the posterior margin. Tegulæ dark brown. Wings, hyaline, the submarginal vein yellowish.

Abdomen oval, as long as the thorax, smooth, shining, except the first segment, which is a little roughened from some striæ.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

This species was reared by myself from a Cynipid gall, *Belonocnemia treata* Mayr, and it is undoubtedly parasitic on a Cecidomyiid inhabiting the gall.

***Metaolisia erythropus*, Ashm.**

Can. Ent., XX, p. 51.

♂. Length, 2.5^{mm}. Black; head opaque, coarsely rugose on the vertex and cheeks; face transversely aciculated, with a central depressed line extending forward from the middle ocellus. Antennæ 10-jointed, black; pedicel as long as the second funicular joint; first funicular joint small, second swollen; club 6-jointed, the joints longer than wide, subpedicellate, hairy, the last joint conical, longer than the preceding. Thorax finely reticulated, or scaly; parapsidal grooves distinct, converging and meeting at the base of the scutellum. Metathorax covered with a sericeous pubescence. Legs rufous, the coxæ black. Abdomen black, polished. Wings subhyaline (probably tinged from the cyanide bottle), faintly pubescent, the tegulæ rufo-piceous.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

MONOCRITA Förster.

Hym. Stud., II, p. 106 (1856)

(Type *M. alinas* Walk.)

Head transverse, wider than the thorax; ocelli 3, in a triangle, the lateral as far from the front ocellus as to the eye margin.

Antennæ inserted just above the clypeus, 10-jointed in both sexes,

in ♀ terminating in a 4-jointed club, the scape slender, pedicel cyathiform, first funicular joint small; in ♂ with a 6-jointed filiform club, the joints slightly pedicellate, oval, the last long conical; the first funicular joint about twice as long as thick, the second stouter, obliquely truncate at tip and curved.

Thorax short, ovoid, convex; prothorax very short; mesonotum with distinct but delicate furrows; scutellum convex; metathorax short.

Front wings pubescent, ciliated, the submarginal vein ending in a knob, the basal nervure distinct, and with a distinct basal cell.

Abdomen ovate, convex, slightly shorter and narrower than the thorax; first segment small, the second very large, the third and following very short.

Legs clavate, the tibial spurs weak, the basal joint of hind tarsi twice the length of the second.

The two species in our fauna may be thus distinguished:

Legs black, the head and thorax microscopically shagreened.

First and second abdominal segments not striated, the latter hairy at base.

M. NIGRIPES Ashm.

Legs brownish-yellow, the head and thorax smooth, impunctured.

First abdominal segment and the second at base striated, not hairy.

M. CARINATA, sp. nov.

***Monocrita nigripes* Ashm.**

Bull. No. 1, Col. Biol. Assoc., p. 8, 1890.

♂. Length, 1.80^{mm}. Black, subopaque, with a fine, granulated, or shagreened sculpture; the face above the insertion of the antennæ with some transverse aciculations. Antennæ 10-jointed, black, the flagellum about twice the length of the scape, pedicel twice as long as thick, narrowed at base, the second joint minute, the third, slightly swollen outwardly, the following joints very slightly longer than wide, truncate at tips and rounded off at base, or cup-shaped, connected by a very short pedicel. Parapsidal grooves distinct, converging and almost meeting posteriorly. Scutellum high convex, with a deep, transverse depression across the base. Mesopleura smooth, polished, with a curved impression across the disk; metapleura densely covered with a griseous pubescence; the metathorax and petiole more sparsely pubescent. Legs black, the knees slightly, anterior legs beneath, and all the tarsi, more or less piceous, or reddish. Abdomen highly polished, oblong-oval, as long as the head and thorax together, the petiole not longer than wide, the second segment occupying fully three-fourths of its length, smooth, the following segments exceedingly short and about equal in length. Wings hyaline, pubescent, the submarginal and basal veins distinct, the former knobbed at tip.

HABITAT.—Greeley, Colo.

Type in Coll. Ashmead.

Nothing is known of the habits of this species, which was obtained from H. F. Wickham.

Acerota melanostropha Ashm.*Monocrita melanostropha* Ashm., Can. Ent., XIX, p. 126; Cress. Syn. Hym., p. 249.

♂ ♀. Length, 1.5 to 2^{mm}. Black, subopaque, closely punctulate; abdomen, except the petiole which is striated, highly polished, impunctate; antennæ brown-black; legs rufous; the posterior femora obfuscated; sometimes all the coxæ and femora, and sometimes the tibiæ, fuscous. Wings hyaline, the submarginal vein ending in a fuscous or blackish knob. Antennæ 10-jointed; in the ♂ the pedicel slender and much shorter than the first funicular joint; first and second funicular joints stout, the second the shorter; third slenderer, about twice as long as thick; all the joints are covered with a fine, whitish pubescence. In the ♀ the pedicel is longer than the first and second funicular joints, the club joints transverse. Head transverse, closely punctate, obliquely narrowed behind the eyes; the face shortened, its width between the eyes longer than from the vertex to the mandibles. Thorax trilobed, the middle lobe with two short indistinct lines anteriorly. Scutellum closely punctate, bounded by a carina behind. Metathorax carinated at sides.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from several specimens. The species was wrongly described under the genus *Monocrita*. The much longer funicular joints, sculpture, and color of the legs separate it from *A. cecidomyia*, while its subopaque, closely punctulate surface, the non-striated face, and the impressed lines on the middle lobe of the mesonotum separate it from *A. floridana* and *A. caryæ*.

Acerota caryæ Ashm.

(Pl. XI, Fig. 7, ♂.)

Can. Ent., XIX, p. 128; Cress. Syn. Hym., p. 249.

♂ ♀. Length, 1.5 to 2.1^{mm}. Much like *A. melanostropha*; the thorax smoother and more shining, very faintly microscopically punctate; the head much as in *melanostropha*, but the face always with a deep median furrow; antennæ, except the 4-jointed club, and the legs, except the posterior coxæ, wholly brownish-yellow; the second abdominal segment finely striated at base above; the pedicel and first and second funicular joints are long and slender, cylindrical, while the club joints, except the last, are transverse.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from many specimens. The species varies in size, but is constant in the color of the legs and antennæ.

Tribe II.—PLATYGASTERINI.

To this tribe belong all species with veinless wings. The genera are more numerous and much more difficult to separate than in the Ino-

stemmini, but it is believed the table below will be found all that is necessary to distinguish them. If, however, the student should be at fault the full generic description may be consulted.

TABLE OF GENERA.

FEMALES.

- Scutellum not lengthened, semicircular, either flat or convex and unarmed.... 5
 Scutellum lengthened, never semicircular, or when shortened it is compressed at sides and furnished with an awl-shaped thorn or tubercle at tip. 2
2. Scutellum with a strong awl-shaped thorn at tip..... 3
 Scutellum with a short thorn or tubercle at tip..... 4
 Scutellum lengthened, triangular, often produced into a long, acute spine.
 Thorax strongly compressed from the sides.
 Head large, rounded, or quadrate.....PIESTOPLEURA Först.
 Thorax not strongly compressed from the sides.
 Mesonotal furrows deep, parallel posteriorly.....XESTONOTUS Först.
 Mesonotal furrows feebly impressed or wanting.....AMBLYASPIS Först.
3. Lateral ocelli nearer the margin of eye than to the apical ocellus; antennal club 4-jointed.....LEPTACIS Först.
 Lateral ocelli not nearer the margin of eye than to the apical ocellus; antennal club 3-jointed.....ISORHOMBUS Först.
4. Abdomen very much lengthened; antennal club 5-jointed. Lateral ocelli as near to the front ocellus as to the margin of the eye ..POLYMECUS Först.
 Abdomen not especially lengthened; antennal club 4-jointed.
 Second ventral segment strongly compressed, sack-like; lateral ocelli their width from the eye margin.....SACTOGASTER Först.
 Second ventral segment normal; lateral ocelli close to the eye margin.
 SYNOPEAS Först.
5. Scutellum convex 6
 Scutellum cupuliform as in the Cynipid genus *Eucoila*.
 CÆLOPELTA Ashm., gen. nov.
 Scutellum not cupuliform, flattened.
 Mesonotal furrows wanting; antennæ 10-jointed, the club 4-jointed.
 ANOPEDIAS Först.
 Mesonotal furrows usually distinct; antennæ 8-jointed, club not jointed.
 AMITUS Hald.
6. Scutellum with a tuft of hair at tip.....TRICHACIS Först.
 Scutellum without a tuft of hair at tip.
 Abdomen very much lengthened. (Polymecus.)
 Abdomen not much lengthened.
 Margin of abdomen very broadly deflexedHYPOCAMPIS Först.
 Margin of abdomen normal.
 Thorax short; the scutellum pillow-shaped, separated from the mesonotum by a deep furrow; mesonotal furrows rarely distinct or complete.
 No keel between the antennæ.....POLYGNOTUS Först.
 A sharp distinct keel between the antennæ.
 ERITRISOMERUS Ashm., gen. nov.
- Thorax more elongate; scutellum not separated from the mesonotum by a deep furrow. Mesonotal furrows distinct, complete.
 Lateral ocelli nearer the margin of the eye than to the apical ocellus; head transverse.....PLATYGASTER Latreille
 Lateral ocelli nearer to the apical ocellus than to the margin of the eye; head cubitalISOCYBUS Först.

MALES.

- Scutellum not lengthened, semicircular, either flat, convex or cupuliform, and unarmed..... 5
- Scutellum lengthened, never semicircular, or when shortened it is compressed at sides and furnished with an awl-shaped thorn or tubercle at tip. 2
2. Scutellum with a strong awl-shaped thorn at tip..... 3
- Scutellum with a short thorn or tubercle at tip..... 4
- Scutellum lengthened, triangular, often produced into a long, acute spine.
Thorax strongly compressed from the sides.
Head large, rounded or quadrate.....PIESTOPLEURA Först.
Thorax not strongly compressed at sides.
Mesonotal furrows deep, parallel posteriorly.....XESTONOTUS Först.
Mesonotal furrows very feebly impressed or wanting.....AMBYASPIS Först.
3. Lateral ocelli nearer the margin of the eye than to the apical ocellus.
LAPTACIS Först.
Lateral ocelli not nearer the margin of eye than to the apical ocellus.
ISORHOMBUS Först.
4. Abdomen much lengthened.....POLYMECUS Först.
Abdomen not especially lengthened.
Ocelli their width from the margin of the eye.....SACTOGASTER Först.
Ocelli close to the eye margin.....SYNOPEAS Först.
5. Scutellum convex..... 6
- Scutellum cupuliform as in Cynipid genus *Eucoila*...CÆLOPELTA Ashm. gen. nov.
Scutellum quite flat.
Mesonotal furrows wanting or distinct; antennæ 10-jointed.
Scutellum separated from mesonotum by a delicate transverse grooved line, not foveate at base; antennæ subclavate, not verticillate.
ANOPEDIAS Först.
Mesonotal furrows usually distinct; antennæ verticillate.
AMITUS Haldeman.
6. Scutellum with a tuft of hair at tip.....TRICHACIS Först.
Scutellum without a tuft of hair at tip.
Margin of abdomen very broadly deflexedHYPOCAMPSIS Först.
Margin of abdomen normal.
Thorax short; the scutellum pillow-shaped, separated from the mesonotum by a deep furrow; mesonotal furrows rarely distinct or complete.
No keel between the antennæ.....POLYGNOTUS Först.
A sharp distinct keel between the antennæ, third joint strongly dilated.
ERITRISOMERUS Ashm. gen. nov.
- Thorax more elongate; scutellum not separated from the mesonotum by a deep furrow; mesonotal furrows distinct, complete, rarely incomplete.
Lateral ocelli nearer the margin of the eye than to the apical ocellus.
PLATYGASTER Latr.
Lateral ocelli nearer to the apical ocellus than to the margin of the eye.
ISO CYBUS Först.

PIESTOPLEURA Förster.Hym. Stud. II, p. 144 (1856); *Catillus* Först. loc. cit., p. 107.(Type *P. Catillus* Walk.)

(Pl. XI, Fig. 8, ♀.)

Head large, rounded, twice the breadth of the thorax, the occiput margined; ocelli 3, in a triangle, the lateral close to the margin of the eye.

Antennæ inserted just above the clypeus, 10-jointed in ♀, with a 4-jointed club, the pedicel much larger than the funicular joints, the club joints transverse; in ♂ the first and third funicular joints are much thickened, about as thick as the pedicel, the second, as long as the two preceding together, spindle-shaped, not especially thickened, club 4-jointed, the joints long, cylindric, slightly pedicellate, pilose.

Thorax strongly compressed, $2\frac{1}{2}$ times as long as wide and highly convex, higher than wide, mesonotal furrows but slightly impressed, obsolete anteriorly, scutellum with a spine or small thorn.

Front wings pubescent, ciliated, entirely veinless.

Abdomen long-ovate, 6-jointed and more pointed at apex in the ♀, 7-jointed and rounded at apex in ♂, the second segment very long, occupying fully more than half the whole surface.

Legs clavate.

In the shape of the head and the strongly compressed thorax this genus is quite distinct from those that follow.

Piestopleura maculipes Ashm.Can. Ent., XIX, p. 128 ♀ (*Catillus*); Cress. Syn. Hym., p. 249.

♀. Length, 0.8^{mm}. Polished black; antennæ and legs, rufous; club of antennæ 4-jointed, black or brown-black; pedicel long; funicular joints small. Head much wider than the thorax. Thorax with indications of furrows posteriorly. Scutellum ending in a small spine, subpubescent. Metathorax very short, pubescent, with a prominent median keel. Abdomen about as long as the head and thorax together, oblong, the petiole striated, subpubescent. Wings hyaline.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

XESTONOTUS Förster.

Hym. Stud., II, p. 107 (1856).

(Type *X. refulgens* Först.)

Head transverse, the occiput margined, the face subconvex; ocelli 3, triangularly arranged, the lateral nearer to the margin of the eye than to the front ocellus; eyes oval.

Antennæ inserted just above the clypeus, 10-jointed in ♀, with all the joints lengthened and thickened toward the apex, without a distinct club; in ♂ the first flagellar joint very small, the second very much thickened, the third the length and thickness of the pedicel, the five following joints cylindrical and slightly pedicellate.

Thorax ovate, the mesonotum with 2 distinct furrows, the scutellum triangularly lengthened, acute.

Front wings veinless.

Abdomen long ovate, the second segment very large, the following short, the first short, narrowed; in ♀ segments 3 and 6 united are only two-thirds the length of the second.

Legs clavate.

(†) *Xestonotus andriciphilus* Ashm.

(Pl. xi, Fig. 9, ♀.)

Can. Ent., xix, p. 128, ♀; Cress. Syn. Hym., p. 249.

♀. Length, 1.8^{mm}. Black; face finely punctate; antennæ and legs brownish-yellow. Mesonotum with 2 sharply defined parallel furrows. Scutellum not greatly prolonged, but subcompressed at sides. Wings hyaline.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Originally described from one specimen reared from the Cynipid oak gall, *Andricus blastophagus* Ashm.

AMBLYASPIS Förster.

Hym. Stud., II, p. 107 (1856).

(Type *A. aliena* Först.).

Head transverse, the vertex subacute; the occiput delicately margined; ocelli 3, in a triangle, the lateral very close to the margin of the eye.

Antennæ inserted just above the clypeus, 10-jointed, the scape very long, subclavate and curved, in ♀ with a 4-jointed club, the first two joints loosely joined, the last two usually closely joined; in ♂ with a 5-jointed club, the joints oval and loosely joined or pedicellate.

Thorax ovate, slightly compressed at sides, the mesonotum convex, entirely without furrows or these only faintly traceable posteriorly; scutellum high, elongate, triangular, and usually produced into a long acute spine, extending high over the metathorax and scarcely separated from the mesonotum; metathorax usually densely pubescent or woolly.

Abdomen subovate or oblong-oval, not or scarcely longer than the thorax, the first segment petioliform, fluted and pubescent, the second segment large, occupying fully half of the remaining surface, without foveolæ at base, the following segments short, equal in length.

Legs long, the femora and tibiæ strongly clavate, the tibial spurs 1,

1, 1, distinct, the tarsi 5-jointed, longer than the tibiæ, the basal joint of hind tarsi three times as long as the second.

As here defined, this genus is divisible into two sections by the shape of the scutellum; in one section the scutellum is triangular, not produced into a long acute spine; in the other the scutellum is produced into a long acute spine projecting far over the metanotum, and it seems to comprise species that by some authors are included in the genus *Leptacis*. But *Leptacis*, as understood by me, is quite different, the scutellum being produced into a short curved spine or tubercle, and, as defined in this work, agrees more nearly with the genus *Ceratacis* Thomson.

TABLE OF SPECIES.

FEMALES.

- Scutellum not or faintly pubescent, the apex produced into an acute spine.....2
 Scutellum covered with a short dense pubescence, apex not produced into an acute spine, triangular.
 Legs brown, trochanters, base of tibiæ, and tarsi honey-yellow; antennæ dark brown, wings with a short fringe.
A. OCCIDENTALIS, sp. nov.
 Legs brownish yellow; antennæ dark brown, scape pale beneath at base; wings with a long fringe.....A. CALIFORNICUS, sp. nov.
 Legs and antennæ pale yellow, the flagellum brown; wings with a short fringe; petiole pale.....A. PETIOLATUS, sp. nov.
2. Spine of scutellum long, extending far over the metathorax, yellow; wings with long ciliæ.
 Legs reddish-yellow, tips of posterior femora and tibiæ brown; tibial spurs short; petiole black, pubescent.....A. AMERICANUS Ashm.
 Legs uniformly reddish-yellow or yellow; legs not especially lengthened, the hind tarsi shorter than their tibiæ.
 Head highly polished; middle and posterior tibial spurs being long; the petiole yellow, pubescent.....A. MINUTUS, sp. nov.
 Head rugulose, opaque; middle and posterior tibial spurs very short, scarcely developed; petiole black, pubescent.....A. RUGICEPS, sp. nov.
 Head highly polished; femora and tibiæ brown or fuscous; the legs lengthened, the hind tarsi longer than their tibiæ; petiole black, pubescent.
A. LONGIPES Ashm.

MALES.

- Scutellum scarcely pubescent, produced into an acute spine2
 Scutellum covered with a short, dense pubescence, the apex not acutely produced.
 Legs pale, brownish-yellow; the flagellum dark brown.
A. CALIFORNICUS, sp. nov.
2. Antennæ and legs honey-yellow or reddish-yellow.
 Club joints not much longer than wide.....A. MINUTUS, sp. nov.
 Club joints five or six times longer than wide.....A. LONGIPES Ashm.
 Tips of posterior femora and tibiæ fuscous; club joints about five times as long as wide.....A. AMERICANUS.

Amblyaspis occidentalis, sp. nov.

♀. Length, 0.8^{mm}. Polished black, impunctured; antennæ brown-black, the scape pale at base; legs brownish, trochanters, base of tibiæ

and tarsi, honey-yellow. Antennæ 10-jointed; pedicel a little shorter than the first two funicular joints together; first and second funicular joints equal, third much shorter and more slender, fourth transverse; club 4-jointed, the last two joints closely united, the first two about equal, a little wider than long, rounded off at base. Scutellum triangular, pubescent, very slightly impressed on each side at base, but medially subconvex and not separated from the mesonotum. Metathorax and metapleura pubescent. Wings hyaline. Abdomen as long as the head and thorax together black, polished, the petiole and base of second segment pubescent.

HABITAT.—Riley County, Kans.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. C. L. Marlatt.

Amblyaspis californicus, sp. nov.

♂ ♀. Length, 1.60^{mm}. Black, smooth, shining; scutellum, metapleura, hind coxæ, and petiole, rather densely pubescent. Antennæ 10-jointed, dark brown, the scape brownish-yellow, more or less dusky above toward apex; pedicel longer than the first funicular joint, the latter twice as long as thick, the second slightly shorter, the third still shorter, the fourth minute; club 4-jointed, stouter than the funicle, the first and second joints quadrate, slightly pedicellate, the two following closely joined, forming a cone. Thorax narrowed towards the head, the collar forming a slight neck, smooth, convex, without furrows. Legs, except the black coxæ, brownish-yellow, or honey-yellow, pubescent, the trochanters long. Wings long, hyaline, fringed.

Abdomen as long as the thorax, smooth, polished, the petiole pubescent. In the ♂ the pedicel is as long as the second funicular joint, the first funicular joint only half as long as the second; the club 6-jointed cylindrical; the joints twice as long as thick, all slightly pedicellate.

HABITAT.—Marin County, Cal.

Types in National Museum.

Described from 1 ♂, 1 ♀ specimen received from A. Koebele.

Amblyaspis petiolatus, sp. nov.

♂ ♀. Length, 0.8^{mm}. Polished black, impunctured; antennæ, except club, legs, and petiole bright yellow; flagellum in ♂ brown.

In the ♀ the pedicel is almost as long as the first and second funicular joints together; second funicular joint about two-thirds the length of the first, the first being twice as long as thick; third and fourth small; club 4-jointed, the first two quadrate, the last two closely joined, conical; in ♂ the flagellum is pale brown, the club joints not wider than long, slightly pedicellate. Lateral ocelli twice their width from the eye margin. Thorax convex (in ♂ piceous at sides) without furrows. Scutellum triangular, not acutely spined at tip, more or less pubescent, with a fovea on each side at base. Metathorax pubescent. Wings

hyaline with a short fringe. Abdomen ovate or elliptic-oval, the petiole longer than thick, pale, pubescent.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***Amblyaspis americanus* Ashm.**

Can. Ent., xix, p. 129; Cross. Syn. Hym., p. 249.

♀. Length, 1^{mm}. Polished black, impunctured; antennæ and legs honey-yellow or brownish-yellow; the tips of posterior femora and tibiæ dusky; club brown, the joints, except the last, not longer than wide. Lateral ocelli only their width from the eye margin. Scutellum produced into a long, acute, yellowish spine. Metathorax and petiole covered with a white pubescence. Wings hyaline, longly fringed. Abdomen oval, polished black, the petiole a little longer than wide, densely pubescent.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***Amblyaspis minutus*, sp. nov.**

♀. Length, 0.6 to 0.8^{mm}. Polished black, impunctured; lateral ocelli close to the border of the eye; antennæ (except club) and legs, yellow or reddish-yellow, with the tips of posterior femora and tibiæ sometimes dusky. Scutellum acutely spined, the spine yellow. Funicle very slender, the first, third, and fourth joints minute, the second very long and slender; club stout, the joints, except the last, not, or scarcely, longer than wide. Wings hyaline, strongly fringed. Abdomen oval, the petiole yellowish, pubescent.

HABITAT.—Washington, D. C.; St. Louis, Mo.

Types in Coll. Ashmead and National Museum.

The specimens in the National Museum were reared by Dr. Riley, at St. Louis, Mo., July 10, 1870, from *Cecidomyia* sp. in squash.

***Amblyaspis rugiceps*, sp. nov.**

♂ ♀. Length, 0.8^{mm}. Polished black, impunctured; frons and face transversely rugulose; antennæ and legs yellow or reddish-yellow, the thickened parts of middle and posterior femora and tibiæ sometimes dusky or brown; club usually obfuscated or brown. Lateral ocelli about twice their width from the eye margin. Club joints a little longer than wide. Scutellum acutely spined, yellowish at tip, foveated on each side at base, subpubescent. Metathorax covered with a white pubescence. Wings hyaline, strongly ciliated. Abdomen oval, the petiole not longer than thick, striated and pubescent.

The face in the ♂ is very rugose, the club joints about 2½ times as long as thick, the second funicular joint a little swollen, the first very minute and closely joined to the second, while the legs are paler and more uniformly yellow.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Amblyaspis longipes Ashm.

(Pl. XI, Fig. 10, ♂.)

Can. Ent., XIX, p. 128; Cress. Syn. Hym., p. 249.

♂. Length, 2^{mm}. Polished black, impunctured; scape and legs pale brownish-yellow or yellow; flagellum brownish-black, pilose; funicle very long and slender, as long as the long scape, the first and last joints short, the second greatly elongated; club 5-jointed, the joints all long, 5 or 6 times as long as thick, subclavate. Head transverse, the vertex bounded behind by a delicate transverse carina; lateral ocelli close to the eye margin; face flat, smooth; mandibles pale. Thorax long, convex, without furrows; scutellum very long, produced into a long, acute, yellow spine, its tip extending over the base of the abdomen; two large pubescent foveæ on either side at base; metathorax pubescent. Tegulae black. Wings hyaline. Legs very long, the hind pair especially long, honey-yellow, tibial spurs distinct, the tarsi very long, slender. Abdomen oval, the petiole about twice as long as thick, striated, pubescent above and beneath, body of abdomen pubescent at base beneath.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

LEPTACIS Förster.

Hym. Stud. II, p. 107. (1856.)

(Type *L. tipula* Kirby.)*Ceratacis* Thoms. Öfvers, 1858, p. 69.

Head transverse, the frons subconvex, the occiput straight, margined; ocelli 3, subtriangularly arranged, the lateral nearer to the eye than to the front ocellus; eyes oval.

Antennæ inserted just above the clypeus, 10-jointed in both sexes; in ♀ terminating in a 4-jointed club, the pedicel much longer than thick, funicular joints 1, 3, and 4 very small, short, the second lengthened; in ♂ ending in a 5-jointed club, the joints of which are usually elongate; joint 1 of funicle small, the second elongate, somewhat swollen, the third smaller.

Thorax ovoid, highly convex, the prothorax visible as an arcuate line, the mesonotum with or without furrows, the scutellum subtriangular, convex at the middle, depressed and with two large transverse or oblique foveæ at base, the apex armed with a more or less curved thorn, rarely reduced to a tubercle, the metathorax short, the metapleura usually covered with a dense silvery, or hoary, pubescence.

Front wings long, pubescent, and veinless.

Abdomen in ♀ pointed-ovate, in ♂ oval or long ovate, the first segment wider than long, the second very long, occupying most of the surface, the following all short.

Legs clavate, the basal joint of hind tarsi three or more times longer than the second.

This genus and *Amblyaspis* are often confused together. If in my definition of *Amblyaspis* I have included both *Leptacis* and *Amblyaspis*, then this genus must be known as *Ceratacis* Thomson.

TABLE OF SPECIES.

FEMALES.

- Mesonotal furrows wanting or only indicated posteriorly..... 2
 Mesonotal furrows complete, distinct.
 Head rugose, the thorax minutely punctate, a distinct line on shoulders.
 Antennæ and front legs brownish-yellow, club brown black.
 L. RUGICEPS, sp. nov.
 Legs brownish-piceous, the trochanters, base of tibiæ and tarsi honey-yellow.
 Head closely, finely punctate, the thorax minutely punctate, no line on shoulders.
 Antennæ brownish-yellow, club brown..... *L. PUNCTATUS*, sp. nov.
 Antennæ wholly brown-black..... *L. FLORIDANUS*, sp. nov.
2. Frons smooth or microscopically punctate..... 3
 Frons transversely striated; thorax smooth.
 Antennæ and legs brownish-yellow or pale rufous, club brown.
 L. STRIATIFRONS, sp. nov.
3. Frons microscopically punctate..... 4
 Frons smooth; coxæ black.
 Abdomen twice the length of thorax, subcompressed.
 L. LONGIVENTRIS, sp. nov.
 Abdomen not longer than the thorax, not compressed.
 L. BREVIVENTRIS, sp. nov.
4. Coxæ black.
 Legs black or brownish-piceous, trochanters, knees, tips of tibiæ, and tarsi yellow..... *L. CYNIPIPHILUS* Ashm.
 Coxæ brownish-yellow; legs and antennæ, except club, yellow.
 L. FLAVICORNIS, sp. nov.

MALES.

- Mesonotal furrows wanting or only indicated posteriorly..... 2
 Mesonotal furrows distinct, complete.
 Head rugose, thorax minutely punctate..... *L. RUGICEPS*, sp. nov.
 Head finely punctate, thorax minutely punctate.
 Antennæ and the middle legs brownish-yellow, the hind legs brownish-piceous..... *L. PUNCTATUS*, sp. nov.
 Head and thorax smooth, shining, the parapsidal furrows delicate.
 Antennæ black; legs, except trochanters and tarsi, fuscous.
 L. FLORIDANUS, sp. nov.
2. Frons smooth; coxæ black.
 Legs brownish-piceous.
 Scape and funicle brownish-yellow, the second funicular joint swollen.
 L. BREVIVENTRIS, sp. nov.
 Legs brownish-yellow or yellow.
 Flagellum brown-black, the club joints $2\frac{1}{2}$ or 3 times as long as thick, much narrowed basally..... *L. CYNIPIPHILUS* Ashm.
 Flagellum yellow, the club joints twice as long as thick, cylindric.
 L. FLAVICORNIS, sp. nov.
- Frons distinctly punctate.
 Scape, pedicel, and legs yellow..... *L. PUNCTICEPS*, sp. nov.
- Frons microscopically punctate; coxæ black.
 Antennæ and legs, except anterior tibiæ and tarsi, which are honey-yellow, brownish-piceous or fuscous..... *L. PUBESCENS*, sp. nov.

Leptacis rugiceps, sp. nov.

(Pl. XII, Fig. 1, ♀.)

♂ ♀. Length, 1 to 1.2^{mm}. Black; antennæ, except club, front legs, and base of middle tibiæ and all tarsi, yellow; rest of the legs fuscous or black. Head transverse, opaque, the frons and face rugose, the lateral ocelli close to the eye. Antennæ 10-jointed, the club 4-jointed, black, the joints, except the last, which is conical and about twice as long as the preceding, are scarcely longer than thick. Thorax subopaque, minutely punctate, with 2 distinct furrows, and a distinct grooved line on the shoulders. Scutellum pubescent, with 2 large foveæ at base, a slight median carina, and terminating in a long awl-shaped spine or thorn. Metathorax very short, with a median carina and covered with a silvery pubescence. Wings hyaline. Abdomen oval, shorter than thorax, polished, the petiole wider than long, rugose, densely pubescent.

In the ♂ the scape and funicle are brownish yellow, the 4-jointed club brown-black; the pedicel is very long and slender, almost as long as all the funicular joints united, last two funicular joints short, not longer than thick; club joints, except the last, quadrate.

HABITAT.—Jacksonville, Fla., and Arlington, Va.

Types in Coll. Ashmead.

Described from several specimens.

Leptacis punctatus, sp. nov.

♂ ♀. Length, 0.8 to 1^{mm}. Black, subopaque, closely, minutely punctate, the thorax smoother; parapsidal furrows delicate but complete; no grooved line on the shoulders; antennæ, except club, and legs, yellow; middle and posterior legs more or less fuscous, or brown; club 4-jointed, brown-black, the joints, except the last, wider than long, the last conic, 1½ times as long as the penultimate; funicle slender. Scutellum with two large foveæ at base, pubescent, ending in a slightly curved, awl-shaped spine. Metathorax and petiole densely pubescent. Abdomen oval, polished, shorter than the thorax.

HABITAT.—Florida, District of Columbia, and Virginia.

Types in Coll. Ashmead.

Common. Allied to *L. rugiceps*, but smaller, more evenly punctate, and the head not so rugose.

Leptacis floridanus, sp. nov.

♂ ♀. Length, 1.1^{mm}. Black, subopaque, faintly, microscopically punctulate, the thorax almost smooth, with two distinct furrows; antennæ wholly brown-black, the club joints twice as long as thick, loosely joined. Scutellum foveated at base, the awl-shaped spine rather short. Metathorax with a silvery pubescence. Wings hyaline. Legs brown or fuscous, the trochanters, base of tibiæ, and tarsi yellowish. Abdomen ovate, not quite as long as the thorax, the petiole very short, transverse, densely covered with a silvery white pubescence.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Leptacis striatifrons, sp. nov.

♀. Length, 1.2^{mm}. Black, shining; frons transversely striated; thorax smooth, with indications of furrows posteriorly; antennæ, except the club, and legs wholly brownish-yellow; club 4-jointed, brown, the joints (except the conical last joint) not, or scarcely, longer than thick. Scutellum bifoveated at base and ending in a long awl-shaped thorn. Metathorax covered with a dense white pubescence. Wings hyaline. Abdomen subovate, shorter than the thorax, black, polished, impunctured, the petiole very short, transverse, pubescent.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Leptacis longiventris, sp. nov.

♂ ♀. Length, 1^{mm}. Polished black, impunctured; tarsi rufo-piceous. Head as wide as the thorax from tegulæ to tegulæ. Mandibles black. Antennæ 10-jointed, in ♀ with a 4-jointed club, the joints, except the last, a little wider than long, the last conical, twice as long as the preceding; funicle slender, the second joint long and slender, the first and last two, short. Thorax without distinct furrows, a slight elevation or prominence just in front of the scutellum, and with a sparse pubescence on either side. Mesopleura smooth, polished. Scutellum with a tubercle at tip, two oblique depressions at base, a median carina, and sparsely covered with a silvery pile. Metathorax at base, metapleura, and base of abdomen densely covered with a silvery pubescence. Tegulæ black. Wings hyaline, iridescent, but slightly pubescent and without a distinct fringe. Abdomen pointed-ovate, twice the length of the thorax, subcompressed, and in shape not unlike the ♀ in *Eurytoma*, but with the lateral carina quite distinct; the first segment is densely pubescent, the second occupies most of the surface, the third, fourth, fifth, and sixth very short, equal, the seventh conical, as long or a little longer than the four preceding together.

In the ♂ the antennæ are bristly, the pedicel oval, the first funicular joint minute, rounded, the second, longer than the pedicel, swollen and a little curved, the club 6-jointed, the first joint oval, about half the length of the second; joints 2-5 long oval, the last cone-shaped, one-third longer than the preceding and thinner. Tip of anterior tibiæ and tarsi dark honey-yellow. Abdomen oblong-oval, depressed.

HABITAT.—District of Columbia and Virginia.

Types in Coll. Ashmead and National Museum.

Many specimens. The peculiar shape of the abdomen and the carinated scutellum readily distinguish the species.

Leptacis breviventris, sp. nov.

♂ ♀. Length, 0.65 to 0.80^{mm}. Black, shining, impunctured; the face very slightly shagreened just above the insertion of the antennæ; lat-

eral ocelli close to the border of the eye; antennæ and legs brown, the trochanters, base of tibiæ, and tarsi yellowish; anterior and middle legs sometimes yellowish. Antennæ 10-jointed, in ♀ with a 4-jointed club, the joints, except the last, not longer than wide, usually wider than long, the last ovate; funicle slender, joints 1, 3, and 4 small, joint 2 elongate; in ♂ with a 4-jointed club, the joints slightly pedicellate and covered with sparse white hairs; second funicular joint swollen, longer than the pedicel; first funicular joint very small, closely joined to the second; joints 3 and 4 small. Thorax convex, polished, without furrows; scutellum foveated at base, pubescent at sides, and terminating in a tubercle or very short spine, which is only twice as long as thick; metapleura covered with a dense white pubescence. Abdomen broadly oval, highly polished, black, a little shorter than the thorax, the petiole very short and transverse, pubescent.

HABITAT.—District of Columbia, Virginia, and Maryland.

Types in Coll. Ashmead.

Described from several specimens.

Leptacis cynipiphilus.

Ashm., Can. Ent., XIX, p. 129, ♀ ♂; Cress., Syn. Hym., p. 249.

♂ ♀. Length, 1.5^{mm}. Polished black; antennæ, except club and the legs, brownish-yellow; coxæ black; in ♀ with the legs fuscous, the trochanters, base of tibiæ, and tarsi yellow; club brown-black; mandibles pale.

Head a little wider than the thorax. Antennæ 10-jointed; the funicle slender, the second joint longer than the first, the third and fourth, small, but a little thicker than the second; club 4-jointed, the joints, except the last, as wide as long; in ♂ with the flagellum black, pilose, the club joints from two and one-half to three times as long as thick; the first funicular joint as long as thick; the second more than twice as long, and stouter.

Thorax smooth, without furrows. Scutellum with 2 broad foveæ at base, pubescent and delicately margined at sides, ending in a small tubercle or a short awl-shaped spine. Metapleura and petiole densely pubescent. Tegulæ black. Wings hyaline with a short, sparse pubescence. Abdomen oval, a little shorter than the thorax, the petiole very short, transverse, covered with a dense white, glittering pubescence, the pubescence extending on to the base of the second abdominal segment.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from several specimens.

Leptacis puncticeps, sp. nov.

♂. Length, 0.8^{mm}. Black, polished; head finely punctate; scape, pedicel, and legs yellow, the posterior femora and tibiæ fuscous or brown. Head transverse, the frons convex. Antennæ 10-jointed, the scape clavate; flagellum brown-black, pilose, the first joint minute, the second about as long as the pedicel but stouter, the third small, the following joints oval, loosely joined. Thorax without furrows, polished; the scutellum terminating in an awl-shaped spine; the metapleura covered with a silvery pubescence. Wings hyaline, the tegulæ piceous. Abdomen oval, not quite as long as the thorax; the petiole short, covered with a glittering white pubescence.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Leptacis flavicornis, sp. nov.

♂ ♀. Length, 0.8 to 0.9^{mm}. Polished black; antennæ, except the club in the female, and legs, bright yellow. Thorax smooth, shining, impunctured, without furrows; scutellum foveated at base and ending in a minute tubercle; metapleura and the very short petiole with a silvery white pubescence. The antennæ in the ♀ end in a 4-jointed club, the joints of which, except the last, are not longer than wide; the funicle is slender, the second joint a little longer than the first, the third and fourth being small; in ♀ the antennæ are entirely yellow; the club 5-jointed, the joints, except the last, being only a little longer than wide; the last being conical, twice as long as the preceding; the first funicular joint is small, closely joined to the second, the latter longer than the pedicel and slightly thickened, the third small, contracted. Wings hyaline. Abdomen oval, shorter than the thorax, pubescent at base.

HABITAT.—Washington, D. C., and Jacksonville, Fla.

Types in Coll. Ashmead.

Leptacis pubescens, sp. nov.

♂. Length, 1.5^{mm}. Black, shining, covered with a fine pubescence; scape and legs, except the anterior tibiæ and tarsi, which are honey-yellow, dark brown or piceous; flagellum black, the club joints pedicellate, pilose, the first funicular joint a little shorter than the pedicel, the second long, fully twice as long as the pedicel, the third small, the first 4 joints of club twice as long as thick, the last three times as long as thick. Thorax without furrows; the scutellum ends in a short tubercle and is foveate at base, the metathorax densely pubescent. Wings hyaline, the tegulæ black. Abdomen oblong-oval, the petiole wider than long, elevated above.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

ISORHOMBUS Förster.

Hym. Stud., II, p. 107 (1856).

Head transverse, the vertex flattened, the occiput with a sharp margin; ocelli 3, triangularly arranged, the lateral far away from the margin of the eye or nearer to the front ocellus than to the eye margin.

Antennæ inserted just above the clypeus, 10-jointed in both sexes, in ♀ terminating in a 3-jointed club, in ♂ with a 5-jointed club, the joints of which are longer than thick, the first funicular joint very minute.

Thorax ovate, the prothorax distinct, the mesonotum much longer than wide, with furrows, the scutellum subconical or subpyramidal, ending in a little spine at tip, and more or less pubescent, the metathorax short, with a median carina.

Wings when folded extending to, or a little beyond, the tip of the abdomen, pubescent and veinless.

Abdomen long, in ♀ pointed-ovate, in ♂ oblong-oval, the first segment longer than wide, the second very large, occupying fully two-thirds of the whole surface.

Legs clavate, the basal joint of hind tarsi twice as long as the second.

Distinguished by the 3-jointed club in the female, the shape of the scutellum, the long mesonotum, and the position of the ocelli.

***Isorhombus hyalinipennis* Ashm.**

(Pl. XII, 2, ♂.)

Can. Ent., XIX, p. 129; Cress. Syn. Hym., p. 249.

♀. Length, 1.5^{mm}. Black, shining, impunctured, the occiput alone finely transversely aciculated; antennæ, except the 3-jointed club and legs, brownish-yellow or yellow; the coxæ and club black. Head transverse, the lateral ocelli about their width from the border of the eye, the mandibles and palpi pale or yellowish.

Antennæ 10-jointed; scape subclavate, as long as the pedicel and funicle united; pedicel not quite as long as the first and second funicular joints united; second funicular joint very little longer than the first; third and fourth small, transverse; fifth much wider, transverse; club 3-jointed, black, the joints loosely joined, the first two subquadrate, very slightly serrate toward one side at apex, last joint oblong. Thorax convex, without furrows or only slightly indicated posteriorly, the little lobe thus formed projecting slightly upon the scutellum. Scutellum subconvex, foveated at base and with only a slight tubercle at tip, the tubercle being subobsolete. Metathorax and petiole subpubescent. Wings hyaline. Abdomen ovate, depressed, polished, impunctured, the petiole scarcely as long as wide.

♂. Length, 1^{mm}. Differs only in the antennæ, the club being 5-jointed, pale, the first and third funicular joints small, the second being stouter and about thrice as long as thick.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Isorhombus arizonensis, sp. nov.

♀. Length, 2^{mm}. Black, highly polished; parapsidal furrows obsolete anteriorly. Head very wide, not very thick antero-posteriorly, the lateral ocelli far away from the margin of the eye. Mandibles piceous. Antennæ 10-jointed, rufo-piceous, the flagellum twice the length of the scape; pedicel a little longer than thick; joint 1 of funicle very minute, closely joined to the second, second about twice the length of third; club 5-jointed, cylindric, the joints, except the last, nearly equal, longer than thick, the last cone-shaped, a little longer than the penultimate. Scutellum conically elevated posteriorly, depressed at base, sparsely pubescent and with a small acute spine at tip. Metathorax, hind coxæ and petiole, pubescent. Legs brownish-yellow, the coxæ black. Tegulæ black. Wings hyaline, pubescent, extending, when folded, scarcely beyond the tip of the abdomen. Abdomen long-oval, polished, about as long as the head and thorax together, the basal joint very little longer than wide, densely pubescent, the margin very wide.

HABITAT.—Fort Huachuca, Ariz.

Type in National Museum.

Described from a single specimen, reared May 8, 1883, from a *Cecidomyioid* gall on an unknown plant, sent to the Department by Mr. H. K. Morrison.

POLYMECUS Förster.

Hym. Stud., II, p. 144 (1856).

Ectadius Förster, loc. cit., p. 108.

Epimeces Westwood (*pars*).

(Type *P. craterus* Walk.)

Head transverse, the occiput delicately margined; ocelli 3, in a curved line, the lateral ocelli only their width from the eye margin.

Antennæ 10-jointed in both sexes, the scape long, subclavate; in the ♀ the club is 4 or 5 jointed, when 4-jointed the last funicle joint is shorter than the preceding, when 5-jointed the last two funicular joints about equal or the last the longer; in ♂ with a 6-jointed, bearded club, the second funicular joint being somewhat swollen and curved or twisted, the first being small.

Thorax ovate, the prothorax distinct from above, the mesonotum much longer than wide (nearly twice as long as wide), usually with 2 distinct furrows; scutellum convex, often, but not always, with a tubercle or spine at tip, the basal part of the middle lobe of mesonotum projecting slightly upon it at base; metathorax short, with 2 carinæ down the center, the metapleura densely pubescent.

Front wings pubescent, veinless, rarely with the submarginal nerve visible, when present not knobbed at tip; in ♀ the wings, when folded, do not extend to the apex of the long abdomen.

Abdomen in the ♀ greatly lengthened, usually twice or more than twice the length of the head and thorax together, sinuated or slightly contracted beyond the middle, the apical portion being narrowed and pointed; the second segment, as usual, is the longest, but the following are also lengthened; in the ♂ oblong-oval as long as the head and thorax together, the second segment very long, the following all short, the terminal segment curving downward and with a distinct margin.

Legs clavate, the basal joint of hind tarsi not quite twice the length of the second.

The very long, pointed abdomen distinguishes the genus.

TABLE OF SPECIES.

FEMALES.

- Head finely punctate, the thorax smooth, impunctured 3
 Head and thorax finely microscopically punctate or shagreened.
 All coxæ black 2
 Hind coxæ alone black; legs rufous.
 Second funicular joint as long as the pedicel *P. CANADENSIS* Ashm.
 Second funicular joint shorter than the pedicel *P. AMERICANUS* Ashm.
 2. Femora black or brown black, tibiæ and tarsi rufous.
 Fifth abdominal segment much longer than the last *P. NIGRIFEMUR* Ashm.
 Fifth abdominal segment shorter than the last *P. VANCOUVERENSIS*, sp. n.
 Legs piceous, anterior tibiæ, base of middle and posterior tibiæ and all tarsi honey-yellow; antennæ black.
 First funicular joint contracted, not longer than thick, collar not striate at sides *P. LUPINICOLA*, sp. nov.
 First funicular joint longer than thick; collar striate at sides *P. PICIPES*, sp. nov.
 Legs brownish-yellow; second funicular joint about half the length of the pedicel *P. PALLIPES* Ashm.
 Legs honey-yellow; scape and the pedicel at tip, yellow *P. MELLISCAPUS*, sp. nov.
 3. Abdomen $2\frac{1}{2}$ times as long as the head and thorax together; very strongly depressed, when viewed from the side cultriform. Coxæ piceous; legs bright yellow *P. COMPRESSIVENTRIS*, sp. nov.
 Abdomen $1\frac{1}{2}$ times as long as the head and thorax together, not depressed.
 Coxæ and legs, yellow *P. AURIPES*, sp. nov.
 Coxæ black; tip of anterior femora and tibiæ, base of middle and posterior tibiæ and all tarsi, honey-yellow *P. ALNICOLA*, sp. nov.

Polymecus canadensis Ashm.

Ectadius canadensis Ashm., Can. Ent., xx, p. 51.

♀. Length, 3^{mm}. Polished black; the head posteriorly very finely shagreened and delicately transversely striated; lateral ocelli about twice their width from the eye; face polished, impunctured. The front ocellus with a transverse furrow at base before; mandibles black. Antennæ 10-jointed, brown-black, the scape tinged with rufous; pedicel as long as the second funicular joint but not so thick; first funicular joint small; club 6-jointed, the first two joints a little more slender than the following, the first, a little longer than the second; joints 3, 4, and 5 about equal in length, $1\frac{1}{2}$ times longer than thick, the upper, outer angle of each

joint very acute, the last joint conical, longer than the preceding. Mesonotum with two distinct furrows. Metathorax, including the pleura and the first abdominal segment, both above and beneath, densely pubescent. Tegulæ rufo-piceous. Wings clear hyaline. Legs rufous, the posterior coxæ basally piceous. Abdomen greatly elongated, more than twice the length of the head and thorax united, narrowed into a long tail from the apex of the second segment, the three terminal segments subequal in length.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Polymecus americanus* Ashm.**

Epimeces americanus Ashm., Can. Ent., XIX, p. 129.

Ectadius americanus Cr. Syn. Hym., p. 249.

♀. Length, 1 to 1.8^{mm}. Polished black; the head behind finely, opaquely sculptured; face highly polished; mandibles rufous. Antennæ 10-jointed, rufous or piceous, sometimes brown-black; pedicel a little longer than the second funicular joint, but more slender; first funicular joint minute; club subclavate, the first and second joints unequal in length, the first slightly the longer and slenderer; joints 3, 4, and 5 not longer than wide at tip, the outer posterior angle acute, last joint conical, a little longer than the preceding. Mesonotum with two delicate but distinct furrows; tegulæ black. Wings hyaline, very slightly tinged. Legs dark rufous to piceous, the trochanters, knees, anterior tibiæ, and the tarsi, paler. Abdomen about one and a half times as long as the head and thorax united, or twice the length of the thorax, the third segment a little longer than the fourth, the others subequal in length, the last being about one-third the length of the fourth, pointed and obliquely truncate from above; the penultimate is twice as long as wide.

HABITAT.—Jacksonville and Fort George Island, Fla.

Types in Coll. Ashmead.

***Polymecus pallipes* Ashm.**

(Pl. XII, Fig. 3, ♀.)

Ectadius pallipes Ashm., Bull. No. 1, Col. Biol. Assoc., p. 9, 1890.

♀. Length, 2.6^{mm}. Black, subopaque, finely granulately sculptured; face smooth, polished, microscopically transversely aciculated just above the insertion of the antennæ. Mandibles rufous. Antennæ 10-jointed, the flagellum one and a half times as long as the scape; the scape, pedicel, and the three or four following joints pale brownish-yellow, the joints beyond black or brown-black; the pedicel is thrice as long as thick, the first joint of flagellum small, annular, the three following

joints cylindrical, less than twice as long as thick, the four terminal joints much thicker and larger, the last being twice as long as thick, the others a little shorter.

The parapsidal grooves are distinct, converging posteriorly; the middle lobe thus formed projects slightly on to the scutellum. Scutellum sub-convex. Pleura smooth, polished, the mesopleura with a grooved furrow extending obliquely to the base of middle coxæ; metapleura densely pubescent; the petiole and the hind coxæ at base are also slightly pubescent. Legs uniformly pale brownish-yellow, with all coxæ black. Abdomen about twice as long as the head and thorax together, and projecting considerably beyond the tips of the wings when folded. Wings hyaline, pubescent.

The δ measures but 2^{mm}. in length; the face is sculptured as the rest of the body, and the antennæ are wholly pale brown; otherwise similar to the φ , except the following structural differences: The antennæ are shorter, the club 6-jointed instead of 4-jointed, the pedicel only a little longer than wide; the first joint of flagellum is small but triangular, the second enlarged, swollen, nearly as broad as long; the following 6 joints, which constitute the club, are narrower and cylindrical, the first the shortest, the terminal one the longest, being about twice as long as the preceding. The abdomen is not much longer than the head and thorax together, and the wings, when folded, project beyond its tip. It might easily be mistaken for a genuine *Platygaster*.

HABITAT.—Greeley, Colo.

Types 5 φ , 3 δ specimens in Coll. Ashmead.

Obtained through H. F. Wickham.

Polymecus nigrifemur Ashm.

Ectadius nigrifemur Ashm., Bull. No. 1, Col. Biol. Assoc., p. 10.

φ . Length, 3 to 3.2^{mm}. Black; sculptured as in previous species, except that the face is not so smooth. Antennæ wholly black, the pedicel about twice as long as thick; otherwise the joints are similar to *pallipes*. All coxæ and femora black, the tibiæ and tarsi, reddish; sometimes the anterior femora are also red, but usually they are piceous or obscured above; the tibiæ, too, are sometimes more or less dusky. Abdomen more than twice longer than the head and thorax combined, the petiole being more pubescent than usual, the sides being almost as densely pubescent as the metapleura. Wings hyaline.

The δ is but 2^{mm} in length, and agrees in color and sculpture with the φ , except that the tibiæ and tarsi are darker than in that sex; structurally it is like the δ of *pallipes*.

HABITAT.—Greeley, Colo.

Types 4 φ , 3 δ , specimens in Coll. Ashmead.

Obtained from Mr. H. F. Wickham.

Polymecus vancouverensis, sp. nov.

♀. Length, 2.8^{mm}. Black, subopaque, closely, microscopically shagreened. Antennæ black, the antennal tubercles yellow; the first and second club joints quadrate, the third, fourth, and fifth not longer than wide at tip, the upper outer angle acute, the last joint conical, twice the length of the preceding. Legs piceous-black; the tibiæ fuscous, tarsi pale brown, the trochanters and base of tibiæ yellow. Tegulæ black. Wings clear hyaline. Abdomen about twice the length of the head and thorax combined, the third segment half the length of the fourth, the fifth and sixth of an equal length, one-third longer than the fourth, the sixth conical.

HABITAT.—Vancouver Island.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

Polymecus lupinicola, sp. nov.

♂ ♀. Length, 1 to 1.6^{mm}. Black, shining, impunctured. Head transverse, as broad as the widest part of the thorax, the vertex posteriorly faintly aciculated. Mandibles black. Antennæ 10-jointed, black, the flagellum rather slender, not quite twice as long as the scape; pedicel more than twice as long as thick at tip; funicle joints slender, cylindrical, the first nearly twice as long as thick, the second longer, the third slightly shorter than the second; club 5-jointed, slightly and gradually thickened toward tip, the first joint twice as long as thick, the second, third, and fourth nearly equal in length, but not twice as long as thick, the last cone-shaped, very little longer than the preceding. Mesonotal furrows distinct posteriorly, becoming obsolete anteriorly, the middle lobe projecting slightly on the scutellum, the lateral lobes with a sparse tuft of pubescence at base. Scutellum convex, smooth, shining, with a small tubercle at tip. Metathorax pubescent. Legs black, the tarsi fuscous or brown. Wings hyaline, pubescent, but not fringed. Abdomen longer than the head and thorax together, pointed at apex, contracted from the apex of the second segment; the fourth segment is one-third longer than the third; the fifth and sixth nearly twice the length of the fourth; segments 3 and 4 with a transverse row of punctures; fifth aciculated except at base.

In the ♂ the legs are black, except the anterior tibiæ and all tarsi which are pale brown; the abdomen is oblong-oval, not longer than the thorax, the first segment and the second with the foveolæ at base striate or aciculate, otherwise mostly polished; tegulæ rufo-piceous; antennæ black; pedicel shorter than the second funicular joint; first funicular small, subtriangular; second swollen, a little curved; club 6-jointed, the joints loosely joined, hairy, the first, the smallest, the

last the largest, intermediate joints a little longer than thick; tubercle at tip of scutellum subobsolete; mesonotal furrows complete.

HABITAT.—San Francisco, Cal.

Types in National Museum.

Described from ♂ and ♀ specimens, reared November, 1885, from a Cecidomyiid gall on *Lupinus athorea*, collected by Albert Koebele.

Polymecus picipes, sp. nov.

♀. Length, 1.8 to 2^{mm}. Black, shining; head transverse, the vertex posteriorly distinctly shagreened; face smooth, polished, except a few transverse lines just above the insertion of the antennæ; legs variable, from a rufo-piceous to almost black, the trochanters, tips of anterior tibiæ, base of middle and posterior tibiæ, and all tarsi pale brownish or honey-yellow. Antennæ 10-jointed, brown-black, the first funicular joint a little longer than thick, the second transverse, the third quadrate, club joints oblong. Mesonotal furrows complete, the middle lobe projecting slightly on the scutellum, the lateral lobes with no tufts of pubescence at base. Collar and mesopleura striated. Scutellum highly convex, subopaque, without a tubercle at tip. Metathorax bare or faintly pubescent. Tegulæ black. Wings hyaline.

Abdomen more than twice as long as the thorax, the petiole coarsely striated, the base of second segment with two aciculated foveolæ at base.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Several specimens.

Polymecus melliscapus, sp. nov.

♀. Length, 25^{mm}. Black, subopaque, very faintly, microscopically shagreened; the head behind and the face transversely aciculated. Scape, pedicel, and legs brownish-yellow; flagellum black; pedicel about as long as the first and second funicular joints united; joints 3, 4, and 5 of club not longer than wide at apex, the last conical, scarcely twice as long as the penultimate. Metathorax and petiole, above and below, densely pubescent. Tegulæ black. Wings hyaline, pubescent. Abdomen twice the length of the head and thorax united, the third segment one-third the length of the fourth, the fifth and sixth equal in length, a little longer than the fourth, the sixth being conical.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen collected by Mr. E. A. Schwarz.

Polymecus compressiventris, sp. nov.

♀. Length, 2.6^{mm}. Polished, black, impunctured; the antennæ and legs golden-yellow, the flagellum very slightly obfuscated at tip. The pedicel is oval, not quite as long as the first and second funicular joints united; first funicular joint narrowed, but twice as long as thick; the

second stouter, obconic; third and fourth about equal, obconic, but longer than the second; the three following joints bell-shaped, loosely joined, the last conical, longer than the preceding. Thorax with two deep furrows. Tegulae piceous. Wings hyaline. Abdomen a little more than three times the length of the thorax, very long and acute, and strongly compressed from above and below; when viewed from the side, knife-shaped.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen collected by Mr. E. A. Schwarz. The very strongly depressed or flat abdomen and the length of the antennal joints at once separate this species from all other described forms, and I am not certain but that they are of sufficient importance to establish a new genus.

Polymecus auripes, sp. nov.

♀. Length, 1^{mm}. Black, shining; the head opaque, closely, microscopically punctate; antennae and legs bright golden yellow. Thorax without furrows, or these only faintly indicated posteriorly; scutellum pubescent, foveated across the base and terminating in an awl-shaped spine; metathorax and base of abdomen densely pubescent. Tegulae prominent, black. Wings hyaline, pubescent. Abdomen a little longer than the head and thorax united, gradually contracted into a tail from the apex of the second segment; the third segment one-half the length of the fourth; the fifth twice as long as thick, and as long or a little longer than the third and fourth segments united; the sixth or last segment conical, a little longer than the fifth.

HABITAT.—Virginia.

Type in Coll. Ashmead.

The small size and the color of the legs sufficiently distinguish the species.

Polymecus alnicola, sp. nov.

♂ ♀. Length, 1.4 to 1.8^{mm}. Black, shining, the head and dorsum of thorax finely, microscopically punctate. Head transverse. Mandibles piceous. Antennae 10-jointed, black, the tip of the pedicel honey-yellow; the flagellum is about twice as long as the scape; pedicel twice as long as thick; first funicular joint slender, slightly longer than thick; second twice as long as thick, stouter; third and fourth about equal, slightly thicker than the second; club joints, except the last, equal, a little longer than thick, the last cone-shaped, slightly longer than the preceding. Mesonotal furrows complete, the middle lobe not projecting on to the scutellum, the lateral lobes with no tufts of pubescence at base. Scutellum highly convex, subopaque, the tip with the tubercle subobsolete. Metathorax sparsely pubescent. Legs black, tips of anterior femora, their tibiae and base and tips of middle and posterior tibiae and all tarsi honey-yellow. Wings hyaline.

Abdomen a little longer than the head and thorax together, shaped as in *P. lupinicola*.

In the ♂ the trochanters, knees, tips of tibiae and tarsi are honey-yellow; abdomen as in *lupinicola*; tegulae rufo-piceous; antennae black, the first funicular joint minute, the second, swollen, curved; club 6-jointed, the joints, except the last, very little longer than thick; scutellum not tubercular at tip.

HABITAT.—District of Columbia.

Types in National Museum.

Described from ♂ and ♀ specimens, reared April 30 and May 1, 1884, from a Cecidomyiid gall, *Cecidomyia serrulata* O. S., found on alder.

SACTOGASTER Förster.

Hym. Stud. 11, p. 108, 1856.

Epimeces Westw. (*pars*).

(Type *E. ventralis* Westw.)

Head transverse, the vertex somewhat acute, the occiput delicately margined; ocelli 3, small, triangularly arranged, the lateral distant from the margin of the eye.

Antennae 10-jointed in both sexes, in ♀ terminating in a 4-jointed club; in ♂ with a 5-jointed, hairy club, the joints twice as long as thick, the funicle cylindrical, the pedicel shorter than the first two funicular joints united.

Thorax subovoid, the mesonotum smooth, a little longer than wide, without furrows, or the furrows only delicately indicated posteriorly; scutellum convex, ending in a thorn, bifoveated at base; metathorax very short with a median carina, the metapleura with a silvery or hoary pubescence.

Front wings veinless, pubescent.

Legs clavate, the basal joint of hind tarsi more than three times as long as the second.

The females in this genus are readily separated from all others, by the inflated second ventral segment of the abdomen, the males by the position of the lateral ocelli.

The two species in our fauna may be thus separated:

TABLE OF SPECIES.

Head closely, finely, microscopically punctate, shining.

Thorax microscopically punctate, parapsidal furrows distinct posteriorly; scutellum, metapleura and base of abdomen with a silvery pubescence; tail not longer than the first and second segments together.

S. ANOMALIVENTRIS Ashm.

Head polished impunctate.

Thorax polished, without a trace of the furrows; scutellum striated; metapleura and base of abdomen bare; tail nearly twice as long as the first and second segments together.....S. HOWARDII Ashm.

Sactogaster anomaliventris.

Ashm. Can. Ent., XIX, p. 130, ♀; Cress. Syn. Hym., p. 249.

♂ ♀. Length, 0.6 to 1^{mm}. Black, shining; the head finely, microscopically punctate; antennæ and legs black or brown-black; trochanters, base of tibiæ and anterior tibiæ at tip, and all tarsi paler or yellowish. The lateral ocelli are away from the margin of the eye; the basal three club-joints are transverse, the first the narrowest, last joint conical; the parapsidal furrows are distinct posteriorly; the scutellum, metapleura and base of abdomen are covered with a silvery pubescence; the scutellum ends in an awl-shaped spine; wings hyaline; the inflated second abdominal segment is as long as the tail.

The ♂ differs from the ♀ in having an oval abdomen, which is shorter than the thorax, and without the inflated second ventral segment; the antennal club is 4-jointed, the basal three joints being equal, quadrate, the funicle slender, while the thorax is subopaque from a faint, microscopic punctuation.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Many specimens. Not rare in April in the flower of gall-berry (*Ilex glaber*), and possibly a parasite on some Cecidomyiid larvæ inhabiting these flowers.

Sactogaster Howardii Ashm.

(Pl. XII, Fig. 4, ♀.)

Can. Ent., XX, p. 52.

♀. Length, 2^{mm}. Polished black, impunctured; the face convex, highly polished; mesonotum without a trace of furrows; scutellum striated, the spine about twice as long as thick; metapleura at base a little wrinkled; antennæ and legs dark rufous, the middle and posterior femora and tibiæ at tips fuscous. Wings hyaline. Abdomen about twice as long as the head and thorax united, the tail being about twice as long as the inflated second segment; the apical lateral parts of the fourth and the fifth segments wholly opaque, sculptured, otherwise the segments are smooth and shining.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Dedicated to my friend, Mr. L. O. Howard, of the U. S. Department of Agriculture. In the highly polished surface, entire absence of parapsidal furrows, striated scutellum, the bare metapleura, and the long tail, it is quite distinct from all other described forms in this peculiar genus.

SYNOPEAS Förster.

Hym. Stud. II, p. 108 (1856).

(Type *S. prospectus* Först.)

Head transverse, the occiput margined; ocelli three, triangularly arranged; the lateral far away from the margin of the eye.

Antennæ 10-jointed in both sexes, the scape much lengthened, clavate; club in female 4-jointed, the funicular joints slender; in male 5-jointed, the joints cylindrical.

Thorax ovoid, convex, the mesonotum with or without furrows; scutellum broad, subconvex, bifoveolated at base, the tip ending in a minute tubercle, rarely entirely wanting, and usually pubescent; metathorax very short, channeled at the middle, the metapleura usually densely pubescent. Wings, veinless, pubescent.

Abdomen, oblong-oval, the apex a little more pointed in the ♀, the first segment a little wider than long, pubescent, the second very large.

Legs clavate, the basal joint of hind tarsi twice or a little more than twice as long as the second.

TABLE OF SPECIES.

FEMALES.

- Mesonotum without furrows, or these only indicated posteriorly 2
 Mesonotum with delicate but complete furrows.
 Coxæ black.
 Legs brown black.
 Antennæ black, first and third funicular joints small... *S. NIGRIPES*, sp. nov.
 Legs pale rufous, posterior femora dusky.
 Antennæ pale brown, the scape rufous *S. RUFIPES*, sp. nov.
 Coxæ pale.
 Legs pale brown.
 Antennæ dark brown, first and second funicular joints slender, cylindric, nearly equal. *S. INERMIS* Ashm.
 2. Mesonotal furrows indicated posteriorly.
 Coxæ brownish-piceous.
 Legs yellowish brown or brownish yellow, the posterior femora and tibiæ at tip obfuscated, with sometimes all femora dusky.
 Antennæ pale brown, tip of scape and the club dusky, joints 1 and 3 of funicle shorter than the second. *S. CORNICOLA*, sp. nov.
 Legs, including coxæ, uniformly brownish yellow, rarely with posterior femora dusky.
 Antennæ dark brown, the first three funicular joints longer than thick, the first the shortest *S. ANTENNARIÆ*, sp. nov.
 Mesonotal furrows entirely wanting.
 Coxæ black.
 Legs reddish yellow or honey yellow, the middle femora and the posterior femora and tibiæ dusky or black.
 Scape rufous, the flagellum brown *S. RUFISCAPUS*, sp. nov.

Synopeas nigripes, sp. nov.

♂. Length, 1^{mm}. Black, shining, with a microscopic sculpture; the face highly polished, with a median impressed line; lateral ocelli twice their width from the margin of the eye. Antennæ 10-jointed, black, the flagellum thickened toward the apex, covered with sparse white hairs; pedicel as long as the first and second funicular joints together, the first funicular joint small, rounded; club joints, except the last, longer than wide, the last ovate. Mesonotum with 2 delicate furrows; scu-

tellum convex, with a subobsolete tubercle at tip; metapleura opaque, sparsely pubescent; metanotum subpubescent. Legs entirely black, the tarsi piceous. Tegulæ black. Wings clear hyaline. Abdomen ovate, petiolate, as long as the thorax, the petiole and the base of second segment striated, the third, fourth, fifth, and sixth segments with a transverse row of fine punctures.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Synopeas rufipes, sp. nov.

(Pl. XII, Fig. 5, ♀.)

♂. Length, 1.5^{mm}. Subrobust, black, polished; the head posteriorly transversely striated, the face very faintly punctured; lateral ocelli one and a half times their width from the margin of the eye. Antennæ 10-jointed, pale brownish yellow, the 5-jointed club black; pedicel longer than the second funicular joint, first and third funicular joints small, the second the smaller, the club joints oval-moniliform. Mesonotum, with the parapsidal furrows distinct posteriorly, the base of the middle lobe projecting slightly upon the scutellum. Tegulæ black. Wings hyaline. Legs rufous, the coxæ black. Abdomen ovate, a little longer than the thorax, the petiole and the foveolæ at base of the second segment striated.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Synopeas inermis Ashm.

Bull. No. 1, Coll. Biol. Assoc., p. 10.

♀. Length, 1.4^{mm}. Black, alutaceous shining. Antennæ 10-jointed, reddish, the pedicel twice as long as thick, the three following joints very slender, cylindrical, the first two about equal in length and twice as long as thick, the third hardly half as long as the second, the fourth short but stouter, not longer than thick; the four following joints, comprising the club, are much stouter; the first of these is the shortest, the second and third about twice as long as thick, the fourth, or terminal joint, being the longest and more than twice as long as thick; these joints are slightly pedicellate.

Thorax with grooves only faintly indicated. Mesopleura smooth and only slightly impressed on the disk. Metapleura and petiole hairy. Legs, including coxæ, honey yellow, the tarsi, except the terminal joint, pale or whitish. The abdomen is about one-third longer than the head and thorax together, prolonged into a point at apex, the second segment occupying fully more than one-half of its whole surface, the segments beyond nearly equal. Wings hyaline, pubescent.

HABITAT.—West Cliff, Colo.

Type in Coll. Ashmead.

Described from a specimen received from Mr. T. D. A. Cockerell.

Synopeas cornicola, sp. nov.

♂ ♀. Length, 1 to 1.4^{mm}. Polished, black, impunctured. Head a little wider than the thorax, the vertex posteriorly not aciculated. Antennæ 10-jointed, pale brown, the scape and the club dusky or fuscous; the first and third funicular joints longer than thick, but still shorter than the second; club 4-jointed, a little thickened toward apex. Thorax ovoid, smooth, polished, with a very sparse pubescence, thickest near the scutellum; parapsidal furrows distinct only posteriorly, anteriorly obliterated; scutellum a little elevated posteriorly, very pubescent, the tubercle covered with hairs; metapleura woolly. Tegulæ rufopiceous. Wings hyaline, pubescent. Legs pale brownish-yellow, the coxæ brown, the posterior femora and tibiæ at tips, obfuscated. Abdomen oblong-oval, as long as the head and thorax together, the petiole striated, sparsely pubescent, the second segment with 2 oblong foveolæ at base, one on each side.

HABITAT.—Kirkwood, Mo.

Types in National Museum.

Described from specimens reared April 3, 1887, by Miss Mary Murtfeldt, from a Cecidomyiid gall on *Cornus paniculata*, at Kirkwood, Mo.

Synopeas antennariæ, sp. nov.

♂ ♀. Length, 0.8 to 1.1^{mm}. Polished, black, impunctured; vertex of head posteriorly with a few faint aciculations. Antennæ 10-jointed, dark brown, the flagellum subclavate, the first funicular joint small but still longer than thick and a little longer than the third, the club 5-jointed, the joints, except the last, scarcely twice as long as thick. Thorax with the mesonotal furrows indicated only posteriorly; scutellum subconvex, smooth, not pubescent, the spine or tubercle wanting; metapleura sparsely pubescent. Tegulæ brown or rufous. Wings hyaline, legs reddish-yellow, the coxæ brownish, the posterior femora sometimes dusky. Abdomen long-ovate, distinctly longer than the head and thorax together, the petiole grooved and with a sparse pubescence.

In the ♂ the abdomen is oblong-oval, about as long as the head and thorax united; the legs uniformly bright yellow; the antennæ pale brown, the first funicular joint very small, rounded, the second a little swollen and curved, about as long as the pedicel, while the club joints are all longer than thick.

HABITAT.—Milwaukee, Wis.

Types in National Museum.

Described from many specimens, in both sexes, reared May 31, 1888, by Mr. William M. Wheeler, from *Cecidomyia antennaria* Whlr.

Synopeas ruficapus, sp. nov.

♂ ♀. Length, 1 to 1.1^{mm}. Polished, black, impunctured; lateral ocelli about twice their width from the margin of the eye, but still a

little nearer to the margin of the eye than to the front ocellus. Scape and legs reddish yellow, the coxæ black, the posterior femora and the tips of the posterior tibiæ fuscous. The pedicel is much stouter than the funicle; the first two funicular joints about equal, cylindric, the third and fourth small, rounded; club 4-jointed, the first three transverse, the last ovate. Mesonotum without furrows; scutellum foveated at base; metathorax short, pubescent. Tegulæ black. Wings hyaline. Abdomen sessile, short-oval, a little shorter than the thorax, the base densely pubescent.

In the ♂ the legs, except the coxæ, are wholly reddish-yellow; the antennæ long, the scape, pedicel, and first funicular joint yellow, the following joints brown-black; the second funicular joint is as long as the pedicel and first funicular joint united, stout, the following joints more slender, cylindric, and about $2\frac{1}{2}$ times as long as thick, the apical joint a little thicker than the basal; scutellum with a minute tubercle at tip; metathorax and base of abdomen covered with a dense whitish pubescence; while the abdomen is oval, much shorter than the thorax.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

***Synopeas melanocerus* Ashm.**

Can. Ent., XIX, p. 130, ♀ ♂; Cress. Syn. Hym., p. 249.

♂. Length, 2.1^{mm}. Black, polished; face faintly alutaceous, with a central furrow. Lateral ocelli as near to the front ocellus as to the margin of the eye. Antennæ 10-jointed, long, filiform, black, the joints after the fourth long, cylindrical, about 4 times as long as thick; pedicel as long as the first and second funicular joints united; the first funicular joint small, the second thickened and curved. Mesonotum with 2 distinct furrows. Metathorax very sparsely pubescent. Tegulæ piceous. Wings hyaline. Legs piceous, the coxæ black, the anterior legs reddish-yellow. Abdomen as long as the head and thorax united, oblong-oval, the petiole and the foveolæ at base of the second segment striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***CÆLOPELTA* Ashm. gen. nov.**

(Type *C. mirabilis* Ashm.)

Head transverse, the occiput scarcely margined, the lateral ocelli as near to the front ocellus as to the margin of the eye.

Antennæ in ♂ 9-jointed, ending in a 4-jointed club; the scape very slender, not extending beyond the ocelli; pedicel very small; first funicular joint a little shorter than the second, the second fully twice as long as thick; the third subtriangular; club joints elliptic-oval, loosely joined.

Thorax ovoid, convex, the mesonotum very little longer than wide,

with faint indications of parapsidal furrows posteriorly; scutellum cupuliform, similar to the Cynipid genus *Eucoila*; metathorax pubescent, with lateral carinæ.

Wings veinless, slightly fringed.

Abdomen ovate, petiolate, the petiole longer than thick, striated.

Legs clavate, the tibial spurs weak, scarcely developed, the tarsi 5-jointed, a little longer than the tibiæ, the basal joint of hind tarsi fully 3 times as long as the second.

A remarkable genus readily distinguished by the cupuliform scutellum and affording additional evidence of the close affinities existing between the *Proctotrypidæ* and the parasitic *Cynipidæ*.

***Cœlopelta mirabilia*, sp. nov.**

(Pl. XII, Fig. 6, ♂.)

♂. Length, 0.8^{mm}. Black, polished; antennæ brown, the scape yellow; legs reddish yellow, the coxæ black; metathorax with a silvery pubescence; wings hyaline, iridescent, the hind wings rounded at apex, with long cilia; abdomen ovate, polished, the petiole subopaque, striated and bare.

HABITAT.—St. Vincent, W. I.

Type in National Museum.

Described from a single specimen collected by Herbert H. Smith.

ANOPEDIAS Förster.

Hym. Stud., II, p. 108 (1856).

Head transverse, the occiput not or indistinctly margined; ocelli 3, triangularly arranged, the lateral usually wide from the eye margin.

Antennæ 10-jointed in both sexes, club in the ♀ 4-jointed, the joints being but slightly thicker than the funicle, cylindric, much longer than thick, the first funicular joint small, the second, third, and fourth nearly equal; in ♂ ending in a 5- or 6-jointed club, the joints loosely joined, the last the largest and thickest, ovate or cone-shaped, the first funicular joint very minute.

Thorax ovoid, the mesonotum rather short, convex, without furrows, or with the furrows exceedingly delicate and so fine as to be overlooked without a strong lens; scutellum flat or subconvex, unarmed at apex and without foveæ at base, separated from the mesonotum by a delicate, transverse, impressed line; metathorax very short, with 2 dorsal carinæ and lateral carinæ.

Wings veinless.

Abdomen in ♀ ovate or pointed, in ♂ oblong-oval, longer than the thorax, or the thorax and head united, the first segment petioliform, the second, very large, with 2 foveolæ at base.

Legs clavate, the tarsi longer than their tibiæ, the basal joint of hind tarsi a little more than twice the length of the second.

Distinguished at once by the shape of the antennæ, and the flat or subconvex scutellum, which is not foveated at base, being separated from the mesonotum by a delicate transverse line.

Förster indicated no type. Thomson's definition of the genus is quite different from mine.

Anopediæ error Fitch.

(Pl. XI^r, Fig. 7, ♀.)

Platygaster error Fitch, Sixth N. Y. Rep., p. 76, Pl. 1, Fig. 4.

♂ ♀. Length, 1 to 1.2^{mm}. Polished black, impunctured. Head transverse, as wide as the thorax across from wing to wing, the vertex posteriorly polished, without trace of aciculations. Antennæ 10-jointed, black, the flagellum subclavate; pedicel pale at tip, as long as the first two funicular joints together; first funicular joint minute; the second, third, and fourth nearly equal; club 4-jointed, very slightly thicker than the funicle, all the joints distinctly longer than wide, the first the shortest, the last the longest. Thorax long-ovate, polished, impunctured, the parapsidal furrows very faint; scutellum flattened, or subconvex, separated from the mesonotum by a very delicate, transverse, impressed line; mesopleura smooth; metapleura strongly sericeous. Tegulæ black. Wings hyaline, iridescent, pubescent and fringed. Legs brown-black, the trochanters, tip of anterior tibiæ, and all the tarsi paler. Abdomen oblong-ovate, polished, very slightly longer than the thorax, the petiole coarsely grooved, the second segment with some longitudinal striæ at base.

The male is smaller, the abdomen oval, shorter than the thorax, while the antennæ have a 6-jointed, slightly pedicellate club. The first funicular joint is very minute, rounded, closely connected with the second, the second a little curved and thickened, truncate at tip; the first club joint is the smallest, the others very gradually increase to the last, oblong-oval in shape, the last being larger and thicker, fusiform, and nearly twice as long as the preceding.

HABITAT.—New York, Washington, D. C., Arlington, Va., and Lafayette, Ind.

Specimens in National Museum.

Described from ♂ and ♀ specimens, reared June 14, 1884, by Mr. F. M. Webster, from *Diplosis tritici*.

I had previously identified a species of *Polygnotus* as *Platygaster error* Fitch, but a more careful examination of Fitch's figure and description satisfies me now that I was mistaken, and that the species described here is really his *P. error*.

The identification by Dr. Fitch of the fragments of an insect sent to him by Mr. Herrick and reared from an Hemipterous egg (*Nabis*), as his *Platygaster error*, was certainly erroneous, since it was undoubtedly nothing but a species of *Telenomus*, as Mr. L. O. Howard has already pointed out.

Anopedias pentatomus, sp. nov.

♀. Length, 0.8^{mm}. Polished black, impunctured, except the metathorax and petiole; parapsidal furrows entirely wanting; scutellum subconvex, separated from the mesonotum by a transverse grooved line; metapleura with a dense sericeous down; petiole sparsely pubescent, striated; legs and antennæ, except the 5-jointed club which is brown-black, honey-yellow, the femora and tibiæ tinged with red.

The head is broadly transverse, much wider than the thorax, the face convex, highly polished, the lateral ocelli twice their width from the border of the eye. Antennæ 10-jointed, the scape clavate, very slender at base, strongly curved; pedicel as long as the 3 funicular joints together; first funicular joint very minute, the second and third equal, not longer than thick; club 5-jointed, the joints a little longer than thick. Abdomen ovate, narrowed at base, the base of the second segment with two long, striated foveolæ at base.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Anopedias incertus.

Ashm., Can. Ent., XIX, p. 138, ♀; Cress., Syn. Hym., p. 249.

♀. Length, 1.6^{mm}. Polished black, feebly sericeous; parapsidal furrows faintly indicated posteriorly; scutellum ending in a small tubercle; metapleura covered with a dense silvery white pubescence; legs and antennæ brownish-yellow or reddish, the 4-jointed club and the coxæ black, the middle and posterior femora obfuscated.

The head is transverse, obliquely narrowed behind the eyes, alutaceous, the ocelli not quite touching the border of the eye. Antennæ 10-jointed, the funicle long and slender, the first joint as long as the long and slender pedicel, the following joints shorter, subequal, club joints, except the last, quadrate, the last conical, nearly twice as long as the penultimate. Abdomen oblong oval, polished, the broadest part a little wider than the thorax, the first segment short, densely pubescent above.

♂. Length, 1.4^{mm}. Agrees with the ♀ except that the antennæ and legs, including all coxæ, are brownish-yellow, the club dusky, the abdomen oval, narrower than the thorax.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

AMITUS Haldeman.

Sill., Am. Jour., 2d Ser., IX, p. 109, 1850.

Zacrita Förster, Kleine Mon., p. 46.

(Type *A. aleurodinus* Hald.)

Head transverse, the frons subconvex, the occiput not margined; ocelli 3, subtriangularly arranged, the lateral distant from the margin of the eye; eyes oval.

Antennæ inserted just above the clypeus; in ♀ 8-jointed, the scape subclavate, lengthened, extending far above the vertex; pedicel long, thicker than the first funicular joint; funicular joints subequal, gradually becoming wider and shorter, the first the longest and slenderest; club thicker than the last joint of funicle and as long as the two preceding joints together, unjointed, but under a high power 3 indistinct joints can be detected; in ♂ 10-jointed, verticillate from the third joint; pedicel short and thick; first flagellar joint as long as the pedicel but thinner and obconic; second nearly twice the length of first, thicker at apex than at base; third to last cylindrical and subequal; last joint elongate, conical.

Thorax robust, subovoid, convex, the mesonotum broader than long with two delicate grooved lines; scutellum large, semicircular, convex, separated from the mesonotum by a transverse grooved line at base; metathorax exceedingly short, abrupt.

Wings broad, ciliated, veinless, although a trace of the submarginal vein can be detected when the wing is viewed through transmitted light.

Abdomen broadly ovate or subcordate, sessile, about as long as the thorax, the first segment very short, transverse; the second very large, occupying most of the surface.

Legs rather long. The femora clavate, tibiæ subclavate, tarsi slender, 5-jointed, longer than their tibiæ, the basal joint of hind tarsi $2\frac{1}{2}$ times as long as the second.

***Amitus aleurodinis* Hald.**

(Pl. XII, Fig. 8, ♀.)

Amitus aleurodinis Hald., Sil. Jour. Sci., 2d ser., ix, p. 110, 1870; Cr., Syn., Hym., p. 250,

Elatius aleurodis Forbes, 14th Ill. Rep., 1884, p. 110, Pl. II, Fig. 6, ♀

Alaptus aleurodis Cr., Syn. Hym., p. 250.

♂ ♀. Length 0.75 to 1^{mm}. Polished black; legs variable in color, most frequently brownish-yellow or pale rufous, the coxæ and femora sometimes dusky or blackish; sometimes only the hind femora and coxæ black.

Antennæ in ♀ 8-jointed, as long as the body, terminating in an unjointed club, brownish-yellow, the club brown; the pedicel and first funicular joint long, the former a little the longer and thicker, the following joints to club subequal in length but gradually thickened; in ♂ 10-jointed, yellow, the flagellar joints with verticillate hairs. Thorax with 2 delicate furrows. Metapleura pubescent. Wings hyaline, ciliated.

Abdomen broad, about as long as the thorax; the first segment very short rugose; the second, except foveolæ at base, and the following, smooth, polished.

HABITAT.—Pennsylvania, District of Columbia, and Illinois.

Types in Coll. American Entomological Society.

The types I have seen; they are still preserved in the Coll. American Entomological Society, although in poor condition. The National

Museum contains a fresh specimen, reared March 29, 1882, by Dr. Riley from *Aleurodes* sp. occurring on *Acer dasycarpum* at Arlington, Va., while my collection contains a single specimen captured with the sweeping net.

Prof. Haldeman gives the following interesting facts respecting it: "Parasitic on the larva of *Aleurodes corni* Hald., of which it destroys a great many. I found it with that insect beneath the leaves of *Cornus sericea* on the margin of a water course. It leaps, walks, and flies with facility, and when touched simulates death. The antennæ are kept in a constant state of vibration. I have kept them a week or more, living in confinement. The ova (crushed from the ovaries) are fusiform, rounded at one extremity and produced at the other like the neck of a flask."

The insect described by Prof. Forbes as *Elaptus aleurodis*, reared from *Aleurodes aceris* Forbes, is evidently identical.

Geoffroy has described an *Aleurodes aceris* in Europe, and I would here suggest the name *A. Forbesii*, for Prof. Forbes's species.

TRICHACIS Förster.

Hym. Stud., II, p. 108 (1856).

(Type, *T. pesis* Walk.)

Head transverse; the frons subconvex, the occiput not or only delicately margined; ocelli 3, in a triangle, the lateral ocelli their width away from the margin of the eye.

Antennæ 10-jointed in both sexes, in ♀ ending in a 5-jointed club, the first and third funicular joints minute, the second lengthened, as long as the pedicel and first funicular joint together; first club joint the shortest, the last the largest, ovate; in ♂ with the club thinner, the joints more elongate, cylindrical, the first and second funicular joints long, not small, or the first very minute, the second swollen.

Thorax ovate, the pronotum produced into a slight neck anteriorly; mesonotum convex, about twice as long as wide, with 2 deep furrows; scutellum somewhat elevated, with a tuft of hair at tip, but without a thorn or tubercle; metathorax very short, with two median keels, the pleura pubescent.

Wings ciliated, veinless, the submarginal vein traceable basally.

Abdomen in ♀ conic-ovate, 4-jointed, the first segment petioliform, striated, the second as long as the two following together, with 2 foveolæ at base, the third less than one-third the length of the fourth, with transverse rows of small punctures, the fourth or last conical, compressed from above and below, margined, the apical half very flat or subconcave, with striæ at base followed by a slight smooth prominence; in ♂ oblong-oval, 8-jointed, the last two segments very minute, segments 3, 4, and 5 nearly equal, usually with transverse rows of punctures.

Legs clavate, the basal joint of hind tarsi more than twice as long as the second.

Distinguished by the tuft of hair at tip of scutellum, antennal characteristics, and the long, distinctly furrowed mesonotum.

TABLE OF SPECIES.

Coxæ black, or at least the hind pair black.

Legs and scape of antennæ rufous.

Flagellum brown black; pedicel scarcely as long as the first funicular joint; fourth ventral segment not punctate, the fifth not striate. *T. RUFIPES*, sp. nov.

Posterior femora, and tips of tibiæ brown.

Flagellum brown; pedicel much longer than the first funicular joint, the second longer than the pedicel, the third small; fourth ventral segment punctate, the fifth striate. *T. RUBICOLA*, sp. nov.

Legs brownish-piceous, anterior pair, base of middle and posterior tibiæ and tarsi honey-yellow.

Antennæ brown, first funicular joint very small, the second elongate; ventral segments with a row of punctures at base. *T. ARIZONENSIS*, sp. nov.

Legs pale brown, the trochanters, anterior tibiæ, and base of middle and posterior tibiæ honey-yellow.

Antennæ brown, the scape and pedicel yellow, first and third funicular joints small, the second elongate; apical ventral segment striated.

T. BRUNNEIPES Ashm.

Coxæ pale.

Legs piceous or brownish, base of middle and posterior tibiæ, anterior tibiæ, and tarsi pale.

Antennæ dark brown, the first and second funicular joints about equal, the third and fourth minute; ventral segments impunctured.

T. VIRGINIENSIS, sp. nov.

***Trichasis rufipes*, sp. nov.**

(Pl. XII, Fig. 9, ♀.)

♂ ♀. Length, 2 to 2.5^{mm}. Black, shining; the thorax with a sparse, fine pubescence. Head transverse, with some microscopic punctures on the crown; lateral ocelli with a slight curved depressed line behind; face highly polished. Antennæ 10-jointed, the scape rufous, the flagellum brown-black; pedicel of equal length with the second funicular joint; first and third funicular joints smaller than the second; club 5-jointed, slightly thickened toward apex, the first joint a little longer than thick, narrowed toward base, the second, third, and fourth joints quadrate, a little rounded basally, the last joint cone-shaped, one-third longer than the preceding. Thorax elongate-ovate with distinct furrow; scutellum depressed across the base, pubescent and with a tuft of hairs at tip; metapleura sericeous; tegulæ black. Wings subhyaline, pubescent, not fringed or the fringe exceedingly short. Legs yellowish-red, the coxæ black. Abdomen longer than the head and thorax together, pointed at apex, the petiole longer than thick, finely rugose, with a middle carina, the second segment very long with two long foveolæ at the base, the tip with sparse white hairs.

In the ♂ the second funicular joint is elongate the club 6-jointed; otherwise closely resembling the ♀.

HABITAT.—District of Columbia, Virginia, Florida, and Missouri.

Types in Coll. Ashmead and National Museum.

Described from several specimens. A single ♀ specimen is in the National Museum, reared by Dr. Riley at St. Louis, Mo., from acorns infested with *Balaninus nasicus* and *Blastobasis glandulella*; but the acorns must have also contained Cecidomyiidinquilines.

***Trichasis rubicola*, sp. nov.**

♂ ♀. Length, 1.4 to 1.6^{mm}. Polished black, impunctured; head with a few transverse aciculations on the crown. Antennæ 10-jointed, the scape yellow, the flagellum pale brown; pedicel oval; first and third funicular joints very minute; second much elongated and thick; club 5-jointed, the joints longer than thick. Thorax ovate, with distinct furrows, the base of the middle lobe elevated slightly upon the scutellum; scutellum with depressions at sides and base, and with a tuft of pubescence at tip; metapleura sericeous; tegulæ black. Wings hyaline. Legs yellowish, the coxæ black, the posterior femora and tibiæ toward tips, dusky. Abdomen longer than the head and thorax together, pointed at tip, the petiole fluted, the second segment with 2 foveolæ at base, the third with some punctures, the fourth, striated.

In the male, the fourth, fifth, and sixth abdominal segments have a transverse row of punctures; club of antennæ 6-jointed, darker colored, the joints cylindrical, at least thrice as long as thick.

HABITAT.—Cadet, Mo., and District of Columbia.

Types in National Museum and Coll. Ashmead.

Described from many specimens. The National Museum contains specimens, reared by Dr. Riley, June 16, 1883, from a Cecidomyiid stem-gall on Blackberry at Cadet, Mo.; and others reared June 9, 1886, from a Cecidomyiid gall on *Vernonia noveboracensis*, collected at Washington.

***Trichasis arizonensis*, sp. nov.**

♂ ♀. Length, 1.2 to 1.6^{mm}. Very closely allied to *T. rubicola*, but differs in the vertex of the head being distinctly aciculated, the antennæ being wholly brown-black, the legs darker, brownish or fuscous, the anterior legs, base of middle and posterior tibiæ and tarsi pale or honey-yellow; while the 5-jointed club in the ♀ is more slender than in *T. rubicola*, with the joints at least twice as long as thick. The sculpture in both species is similar.

HABITAT.—Mount Graham, Ariz.

Types in National Museum.

Described from specimens reared from a Cecidomyiid gall on wild sunflower, received from Mr. H. K. Morrison.

***Trichasis brunneipes* Ashm.**

Can. Ent., XIX, p. 131, ♀; Cress. Syn. Hym., p. 250.

♀. Length, 2^{mm}. Elongate, polished, black, impunctured; head transverse, the lateral ocelli a little more than their width from the margin of the eye. Antennæ 10-jointed, cylindrical, the scape and

pedicel yellow, the flagellum brownish-black; the first funicular joint is very small, the second elongate, twice the length of the pedicel, the third obconic, shorter than any of the following joints, which are fully twice as long as thick, cylindric and loosely joined, the last being conical and a little longer than the preceding joint. Thorax long, with 2 complete furrows; scutellum with a tuft of pubescence at apex covering a minute tubercle; metathorax pubescent. Legs brownish-yellow, the anterior pair yellowish, the middle and posterior coxæ and thickened parts of their femora and tibiæ brownish. Wings hyaline, pubescent. Abdomen long, conically pointed, polished, the petiole striated, the third segment with a transverse row of punctures, the fourth striated; the apical dorsal valve flattened, smooth, delicately margined at sides.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Trichasis virginienensis, sp. nov.

♀. Length, 1.1^{mm}. Polished, black, impunctured; head transverse, shining, the vertex separated from the occiput by a transverse ridge, the lateral ocelli being nearer to the front ocellus than to the margin of the eye. Antennæ 10-jointed, brownish-yellow, the club black; first and second funicular joints equal, longer than thick, the third small, the fourth triangular; the club a little thickened towards apex, the first three joints transverse, rounded at base, truncate at tip, the first the smallest, the last joint conical, nearly twice as long as the penultimate; all the club joints slightly pedicellate. Thorax ovate, polished, with two distinct furrows which are very delicately impressed anteriorly; sides of collar visible in front of the tegulæ; scutellum, with finely rugose, pubescent foveæ at base, a convex, shining prominence medially and a tuft of pubescence at tip, inclosing a small tubercle; metapleura pubescent. Wings subhyaline, probably from the fuscous pubescence. Legs brownish-yellow, the coxæ and femora with a reddish tinge. Abdomen pointed ovate, polished, petiolated; the petiole roughened, the apical segment conical, as long as the fourth and fifth together; the second segment with 2 striated foveolæ at base.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Trichasis auripes Prov.

Add. et Corr., p. 403.

♀. Long. 15 pce. Noire, polie, brillante; le scape avec les pattes d'un beau jaune d'or. Le funicule des antennes brun foncé. Ailes sans nervures distinctes, grandes, plus longues que l'abdomen. Le thorax rétréci en avant, le mésothorax avec deux sillons très apparents; l'écusson convexe, terminé par une touffe de poils grisâtres, séparé du mésothorax par une double fossette large et profonde. Les hanches noires, les cuisses postérieures renflées en massue et plus ou moins obscures. Abdomen subsessile, poli, brillant, déprimé, arrondi à l'extrémité, le 2^e segment le plus grand. (Provancher.)

HABITAT.—Cap. Rouge, Canada.

Not recognized.

HYPOCAMPSIS Förster.

Hym. Stud., II, p. 108, (1856.)

(No type described.)

Head transverse, frons convex, the occiput not margined; ocelli 3, in a triangle, the lateral nearer to the front ocellus than to the margin of the eye.

Antennæ 10-jointed in both sexes, in ♀ subclavate, or with a 4- or 5-jointed club, all the joints cylindrical, the joints 2 to 6 longer than thick; in ♂ with the first funicular joint short, cup-shaped, the second very strongly thickened, the last 6 joints cylindric, with short hairs, the last the longest.

Thorax subovoid, the mesonotum short, convex, with two impressed lines; scutellum subelevated, rounded behind, foveated at base; metathorax very short, the pleura pubescent.

Wings veinless, pubescent.

Abdomen nearly elliptical, the margins broadly deflexed, the first segment longer than thick, the last 4 segments together not quite as long as the second.

Legs clavate.

Distinguished by the broad, deflexed margins of the abdomen. Förster's type appears not to have been described, although Thomson has recognized the genus in Sweden and describes three species therein.

Hypocampsis pluto Ashm.

(Pl. XII, Fig. 10, ♀.)

Can. Ent. XIX, p. 131, ♀; Cress. Syn. Hym., p. 250.

♀. Length, 1.5^{mm}. Wholly black, polished, the tarsi alone slightly piceous. Head transverse, wider than thorax, the lateral ocelli more than their width from the margin of the eye; the eyes large, long-oval. Antennæ 10-jointed, the last funicular joint thicker than the preceding; club 4-jointed (5-jointed if we count the thickened last funicular joint which might really be considered as belonging to it), the joints all longer than thick, cylindric, the last conical and longer than the penultimate. The thorax is roundedly narrowed anteriorly with 2 delicate furrows; scutellum rounded, highly convex; the metathorax short, strongly sericeous. Wings hyaline, pubescent, the tegulae black. Abdomen subovate, pointed at tip, narrowed toward base, very little longer than the thorax, with broad lateral margins.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

ERITRISOMERUS Ashm., gen. nov.(Type *E. cecidomyia*.)

Head broadly transverse, with a sharp acute process between the antennæ, the lateral ocelli away from the eye margin, but still nearer to it than to the front ocellus.

Antennæ 10-jointed, in both sexes, ending in a 6-jointed club, the second funicular joint in the male very broadly dilated, the first being very minute and closely joined to, and not separable from, the second.

Thorax ovoid, convex, the mesonotal furrows distinct, the scutellum rounded, the metathorax very short, bicarinated.

Wings veinless, almost bare of pubescence.

Abdomen oval, the petiole short.

Legs clavate, the hind tarsi longer than their tibiæ, the basal joint long.

A genus allied to *Platygaster*, but readily separated in the female by the acute carina between the antennæ, and in the male by the very broadly and roundedly dilated second flagellar joint, the first and second being conjoined.

Only a single species is known.

***Eritrissomerus cecidomyiæ*, sp. nov.**

(Pl. XIII, Fig. 1, ♀.)

♀. Length, 2.1^{mm}. Black, subopaque, finely sculptured; head transverse, the vertex and cheeks rugulose; frons with an impressed line in front of the front ocellus, the face transversely striated; lateral ocelli a little more than their width away from the margin of the eye; mandibles rufo-piceous. Antennæ 10-jointed, the scape, except at both ends, and the 6-jointed club, brown-black; antennal tubercle, distal ends of scape, the pedicel and funicle honey-yellow; the pedicel as long as the first and second funicular joints united, the first funicular joint slender, closely united with the second and longer than thick, the second obliquely truncate at tip; club 6-jointed, submoniliform, the joints closely joined, except the last, joints not longer than thick. Thorax with two distinct furrows, the scutellum convex, margined at sides, closely punctate, the mesopleura impressed at the middle, the convex piece beneath the tegulæ striated, the metapleura bounded above by a distinct carina, striate and pubescent. Wings clear hyaline, the tegulæ piceous. Legs blackish, the anterior pair, except the coxæ, base of middle and posterior tibiæ, honey-yellow, the middle and posterior tarsi brownish. Abdomen oval, scarcely longer than the thorax, with the basal one-third of the second segment and the petiole striated.

In the ♂ the antennæ are wholly brownish-yellow, with the second funicular joint very broadly roundedly dilated, the first, second, and last joints of the club being distinctly longer than thick, while all the trochanters and the knees of middle and hind legs are honey-yellow.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Described from several specimens, reared from a Cecidomyiid gall on Hickory.

POLYGNOTUS Förster.

Hym. Stud. II, p. 108 (1856).

(Type *P. striolatus* Nees.)

Head broadly transverse, the vertex broad, the occiput margined, ocelli 3 in a triangle, the lateral close to the margin of the eye.

Antennæ 10-jointed, the scape subclavate, slightly curved at base, in both sexes terminating in a 5-jointed club, the funicular joints vary but the first in both sexes is usually minute, the second and third subequal, cylindric, in ♀, while in the ♂ the second is enlarged, swollen, the third scarcely half as large, thinner and obliquely truncate at apex.

Thorax subovoid, convex, the mesonotum rarely $1\frac{1}{2}$ times as long as wide, with or without furrows; scutellum transversely elevated, convex or cushion-shaped, separated from the mesonotum by a transverse depression or furrow; metathorax short, the metapleura bounded above by a carina.

Wings veinless.

Abdomen, in ♀, pointed-ovate, depressed, 6-jointed, the first joint petioliform, striated, the second longer than the following together, smooth, with 2 oblong foveolæ at base, in ♂ oblong oval, 7- or 8-jointed.

Legs clavate, the basal joint of hind tarsi about thrice as long as the second.

Distinguished from *Platygaster* by the shorter, rarely distinctly grooved mesonotum, broader head, different antennæ, and the higher, more convex, or cushioned-shaped scutellum, which has a deep transverse impression all across the base.

TABLE OF SPECIES.

FEMALES.

Mesonotal furrows entire	6
Mesonotal furrows indicated only posteriorly	3
Mesonotum without trace of furrows, or the faintest trace of them posteriorly.	
Vertex not transversely aciculated	2
Vertex transversely aciculated.	

Coxæ black.

Legs black or brown-black.

Antennæ black; pedicel as long as the two following joints united and much thicker, the tip pale; first joint of funicle small, second and third larger, nearly equal, the second slightly the larger, fourth transverse; club joints, except the last, as broad as long.

P. SALICICOLA

Antennæ brown-black; pedicel much longer than the two following joints united and much stouter; joints one and two of funicle very small, nearly equal, the third slightly larger, fourth transverse; club joints, except the last, only slightly longer than thick.

P. DIPLOSIDIS

Coxæ dark rufous or pievous.

Legs rufous, the tarsi yellowish, femora and tibiæ often dusky.

Scape black, sometimes pale at base and apex, flagellum dark brown; pedicel as long as the two following joints united and stouter; joints one and three of funicle minute, the second slightly larger, fourth longer than wide; club joints except the last, very slightly wider than long

P. BACCHARICOLA Ashm.

Front legs, all trochanters and tarsi honey-yellow, sometimes the front femora and tibiæ dusky, middle and posterior femora and tibiæ dark brown or black; sometimes all the legs pale brown.

- Antennæ brown, the scape variable, sometimes almost black; pedicel longer than the two following joints united, not especially stout; joint 1 of funicle very minute, second larger and a little thicker than the third, fourth broader; club joints, except the last, not especially widened, slightly longer than wide *P. SOLIDAGINIS* Ashm.
2. Legs dark rufous, the tarsi pale.
 Antennæ brown; funicular joints 1 to 3 very small, slightly increasing in size, fourth larger; club joints, except the last, scarcely longer than wide *P. PINICOLA*.
3. Vertex not transversely striated or aciculated, smooth, or at the most very faintly aciculated 4
 Vertex posteriorly strongly transversely striated or aciculated.
 Vertex impressed at the middle, subangulated just over the eyes.
 Legs and antennæ black or brown-black *P. STRIATICEPS*.
 Vertex not impressed at the middle.
 Coxæ black.
 Legs and antennæ black, trochanters, tip of anterior tibiæ, and tarsi honey-yellow.
 Dorsal abdominal segments 3, 4, and 5 impunctured, joint 1 of funicle very minute, pale, second slightly longer than the third.
 Club joints a little longer than thick, cup-shaped, outwardly subserrate *P. ATRIPLICIS*.
 Club joints wider than long, outwardly not serrated *P. ARTEMISIÆ*.
 Dorsal abdominal segments 3, 4, and 5 with a row of punctures.
 *P. VIRGINIENSIS*.
 Legs brown or piceous, trochanters, knees, tips of anterior tibiæ, and tarsi pale.
 Head very wide.
 Apical ventral segments not punctate.
 Tegulæ black; joint 1 of funicle very minute, second longer than the third; club not especially widened, the joints scarcely broader than long *P. ALNICOLA*.
 Tegulæ rufo-piceous; joint 1 of funicle small, second and third nearly equal; club very wide, the joints wider than long, serrate toward one side *P. TUMIDUS*.
 Apical ventral segments punctate.
 Head four or more times as wide as thick.
 Club joints longer than wide *P. LATICEPS*.
 Head not especially wide.
 Tegulæ rufo-piceous; antennæ brown; pedicel not long, cylindric, twice as long as thick; joint 1 of funicle small, not longer than thick, second larger and a little longer than the third; club joints, except the last, scarcely longer than wide *P. HIEMALIS* Forbes.
 Tegulæ black; antennæ brown-black; pedicel long, cylindric, fully thrice as long as thick, second longer and thicker, third a little longer than the second; club slender, the joints distinctly longer than wide *P. PROXIMUS*.
 Coxæ rufo-piceous or pale.
 Legs and antennæ dark brown; trochanters, base of tibiæ, and tarsi pale.
 Tegulæ rufo-piceous; joint 1 of funicle very minute, second and third larger, about equal in length, the second the thicker; club joints, except the last, as wide as long.
 Four last dorsal segments with a row of punctures *P. VITICOLA*.
4. Vertex angularly produced just over the eyes.
 Legs and antennæ black; tarsi piceous *P. UTAHENSIS*.

Vertex not angularly produced.

Coxæ rufo-piceous or pale 5

Coxæ black.

Legs black or brown-black, the tarsi usually pale.

Metapleura bare, aciculated.

Club stout; the joints, except the last, as wide as long.

P. CYNIPICOLA Ashm.

Metapleura covered with a sericeous pubescence.

Tegulæ rufo-piceous.

First three funicular joints slender, cylindric, of equal thickness, the second slightly longer than the third; club slender, the joints distinctly longer than thick P. EUROTILE.

First funicular joint small, the second and third larger, equal; club slender, the joints, except the last, not longer than thick P. RUBI.

Tegulæ black.

First funicular joint very small, second and third longer, equal, the fourth stouter; club very slender, the joints, except the last, scarcely longer than thick; a tuft of hairs at base of parapsides P. ASYNAPTÆ.

First funicular joint small, the second and third longer, the second the larger, the fourth stouter, a little longer than the second; club not so slender, the joints, except the last, slightly wider than long; no tuft of hairs at base of parapsides P. HUACHUCÆ.

5. Tegulæ rufo-piceous.

Legs rufo-piceous, the front tibiæ and all tarsi and knees honey-yellow.

Antennæ brown-black; joint 1 of funicle minute, second slightly longer and thicker than the third, fourth as long as second, but stouter; club joints slightly pedicellate, a little longer than thick; no tuft of hairs at base of parapsides P. ACTINOMERIDIS.

Antennæ brown; joint 1 of funicle very minute, second and third longer, about equal, fourth stouter; club joints longer than thick; a tuft of hairs at base of parapsides P. VERNONIÆ.

Tegulæ black.

Legs rufo-piceous, trochanters, knees, tips of tibiæ, and tarsi pale or honey-yellow.

Antennæ dark brown; joint 1 of funicle minute, not rounded, second a little larger, third shorter than second; club joints as wide as long; a slight tuft of hairs at base of parapsides P. ASTERICOLA.

6. Vertex posteriorly microscopically shagreened or punctate.

Coxæ black.

Legs black, tarsi fuscous.

Antennæ black, slender; funicle joints, first and second small, about equal, scarcely longer than thick, third and fourth larger, equal; club very slightly thicker than the last funicular joint, a little thicker toward apex; the joints, except the last, one and a half times as long as thick; wings hyaline P. COLORADENSIS.

Antennæ very slender, long, subclavate, black; joint 1 of funicle twice as long as thick, second nearly twice as long as the first, third and fourth shorter but stouter; the club joints thrice as long as thick; wings hyaline P. FILICORNIS.

Vertex posteriorly smooth, shining.

Coxæ and legs black, the tip of anterior tibiæ and tarsi fuscous.

Antennæ black, the pedicel $2\frac{1}{2}$ times as long as thick; first three funicular joints about of an equal length, the third a little the stoutest; club 5-jointed, very little longer than thick, except the last, the three middle joints outwardly subserrate; wings slightly smoky.

P. CALIFORNICUS.

MALES.

- Mesonotum with the furrows complete 5
 Mesonotum with furrows indicated only posteriorly 3
 Mesonotum without trace of furrows or the faintest trace posteriorly.

Vertex not or very faintly transversely aciculated 2

Vertex transversely aciculated or striated posteriorly.

Coxæ black.

Legs black or brown-black.

Antennæ black; pedicel longer than the first two funicular joints; first funicular joint very minute close to the second; the second as wide as long; third narrow, a little longer than thick; the fourth transverse, smaller than the first club joint. P. SALICICOLA.

Coxæ rufo-piceous.

Legs dark rufo-piceous, tarsi honey-yellow, femora and tibiæ dusky at the middle.

Scape black, flagellum dark brown. P. SOLIDAGINIS.

Antennæ brown-black; pedicel about as long and thick as the second funicular joint; club 6-joint oval-moniliform, slightly pedicellate, hairy.

P. BACCHARICOLA.

Antennæ dark brown; pedicel almost as long as three funicular joints united; first funicular joint minute, close to the second; the second twice as long as the first; the third half the length of fourth; first three club joints equal, oval, the last conic, narrower and longer than the preceding. P. DIPLOSIDIS.

Legs rufous, the tarsi pale.

Antennæ brown; pedicel about as long as the first two funicular joints united; the first funicular joint minute, closely united with the second; the second subtriangular or twisted, dilated towards one side; club 6-jointed, oval-moniliform, slightly pedicellate, hairy. . P. PINICOLA.

2. Coxæ black.

Legs dark brown, tarsi whitish.

Pedicel a little longer than the second funicular joint, the first very small; club 6-jointed, the joints, except the last, moniliform, the last cone-shaped, nearly twice as long as the preceding. P. PROXIMUS.

Legs black.

Pedicel as long as the second funicular joint; first funicular joint small, rounded; the second shorter than the first club joint; club 6-jointed, the joints, except the last equal, a little longer than thick, the last long fusiform, thicker, and twice as long as the preceding. . P. ASYNAPTÆ.

Coxæ pale or brown; antennæ dark brown.

Legs brownish-yellow, posterior femora dusky.

Pedicel as long as the first and second funicular joints united; the tip yellow; first joint of funicle very minute, the second a little curved; club 6-jointed, a little thickened toward apex; the joints, except the last moniliform; the last conic, not twice as long as the preceding. .

P. ACTINOMERIDIS.

3. Coxæ brown or rufo-piceous. 4

Coxæ black.

Vertex posteriorly transversely aciculated.

Legs and antennæ black, tarsi pale.

Pedicel as large as the first and second funicle joints together, the first small, rounded, the second wider than long, a little dilated towards one side, club 6-jointed, the joints oval, gradually increasing in size, loosely joined, hairy, the last fusiform, twice as long as the preceding. P. STRIATICEPS.

Pedice! smaller than the second funicular joint, the first funicular as long as thick, close to the second, the second longer than wide, and a little thicker than any of the others, club 6-jointed, the joints, except the last, not longer than wide, the last cone-shaped, twice as long as the preceding, all with glittering white hairs..... P. ATRIPPLICIS.

Pedice! as long as the second funicular joint, the first rounded, the second curved, twice as long as thick, club 6-jointed, with white hairs, the joints, except the last, oval, loosely joined, the last cone-shaped, twice as long as the preceding..... P. VITICOLA.

Trochanters, anterior knees and tibiae at tips, all tarsi and the base of middle and posterior tibiae, honey-yellow.

Pedice! longer than the second funicular joint, which is dilated apically, the first funicular joint small, club 6-jointed, the joints, except the first and last, a little longer than thick, the first as wide as long, the last conical, twice as long as the preceding.....P. HIEMALIS Forbes.

Legs rufo-piceous, anterior tibiae and the tarsi honey-yellow.

Pedice! as long as the first and second funicular joints together, the first small, the second a little longer than wide at apex, the third shorter, club 5-jointed, the joints, except the last, quadrate... P. CYNIPICOLA.

Pedice! not as long as the first and second funicular joints united, the first small, rounded, the second nearly twice as long as thick, club 6-jointed, hairy, the joints, except the last, oval, the last fusiform, twice as long as the preceding..... P. ALNICOLA.

4. Legs brown, middle and posterior femora dusky.

Pedice! longer than the second funicular joint, the first small, rounded, the second curved, dilated at tip, club 6-jointed, the joints, except the last, moniliform, loosely joined, the last fusiform, twice as long as the preceding..... P. ASTERICOLA.

Pedice! as long as the first and second funicular joints united, the first very minute, the second a little thicker than long, not dilated at tip, club 6-jointed, the joints, except the last, moniliform, the last thicker, long-oval, not twice as long as the preceding.....P. VERNONIAE.

Legs dark rufous.

Pedice! as long as the second funicular joint, the first small, rounded, the second thickened, slightly curved, club 6-jointed, the joints, except the last, longer than thick, the last conic, one-third longer than the preceding.....P. EUURÆ.

Legs pale brownish-yellow, the posterior femora and tibiae slightly dusky.

Antennæ, except the club, pale brownish-yellow; pedice! as long as the first three funicular joints united, first and second small, the third dilated, club 6-jointed oval-moniliform, the last joint twice as long as the preceding.....P. FLORIDANUS.

Vertex not punctate or shagreened, shining..... 6

5. Vertex finely closely punctate or shagreened, opaque.

Coxæ black.

Vertex angularly produced over the eyes.

Legs black, the tarsi rufous.....P. ANGULATUS.

Vertex not angularly produced over the eyes, normal.

Legs dull rufous, posterior femora piceous, tarsi yellowish, sides of pronotum striated; joints of club, except the last, transverse-moniliform, the last fusiform, twice as long as the penultimate; second funicular joint very slightly dilated.....P. STRIATICOLLIS.

Sides of pronotum perfectly smooth, polished; joints of club, except the last, transverse-moniliform, the last fusiform; second funicular joint much dilated.....P. LEVICOLLIS.

6. Head and thorax polished.

Antennæ and legs black, pedicel about as long as the first and second funicular joints united, pale at tip, the first small, the second a little curved, club 6-jointed, the joints, except the last, a little longer than thick, the last cone-shaped, one-third larger than the penultimate.

P. COLORADENSIS.

Antennæ and legs rufo-piceous.

Pedicel not as long as the first and second funicular joints united, the second large, dilated, curved, the joints of club longer than wide, the last twice as long as the penultimate..... P. FILICORNIS.

Pedicel as long as the first and second funicular joints united, the second swollen, the joints of the club twice as long as thick, the last not twice as long as the penultimate..... P. CALIFORNICUS.

Polygnotus salicicola, sp. nov.

♂ ♀. Length, 0.80 to 1.40^{mm}. Polished black; head thrice as wide as thick antero-posteriorly, the vertex posteriorly strongly transversely aciculated, face smooth. Antennæ 10-jointed, black, the flagellum not quite twice as long as the scape; pedicel as long as the first and second funicular joints together but stouter, the tip pale; joint 1 of funicle very small, yellowish, not as long as thick; second scarcely twice as long as thick, third shorter, fourth no longer than the third but a little stouter, rounded basally; club joints, except the last which is longer than the preceding, as wide as long, truncate at tips and rounded basally. Thorax ovoid, the collar anteriorly slightly microscopically shagreened, mesonotal furrows most frequently entirely wanting, seldom slightly indicated posteriorly, the base of the parapsides, just in front of the scutellum, delicately punctate and sparsely pubescent. Scutellum transversely highly, convex, polished. Metapleura nearly bare, delicately sculptured. Tegulae black. Wings hyaline, iridescent, pubescent. Legs black, the tibiae and tarsi piceous or brown-black. Abdomen very slightly larger than the thorax, polished, the petiole fluted at base, the second segment with two slight foveolæ at base which are faintly aciculated.

The ♂ is usually the smaller, the abdomen being scarcely as long as the thorax, and broadly rounded behind, while the differences in the antennæ readily distinguish it. The flagellum is covered with a rather dense, short, white pubescence; the pedicel oval, not longer than the second funicular joint; first funicular joint moniliform; second thickened at tip, and longer than any of the club joints except the last; club joints, except the last, not longer than thick, the last pointed, fusiform, twice as long as the penultimate.

HABITAT.—Los Angeles, Cal.

Types in National Museum.

Bred by A. Koebele from a Cecidomyiid gall on the midrib of willow.

Polygnotus diplosidis, sp. nov.

♀. Length, 1^{mm}. Polished, black; head as in *P. salicicola*, but the vertex posteriorly is not so strongly aciculated. Mandibles yellow. Antennæ 10-jointed, brown-black; pedicel longer and stouter than the two following joints together; first three funicular joints about equal in thickness, the first and second small, about equal in length, the third very slightly longer; club 5-jointed, joint 1 not quite as thick as the following, 2, 3, and 4 about equal, a little longer than thick, cup-shaped, the last cone-shaped, 1½ times as long as the preceding. Thorax ovoid, not much longer than wide, without a trace of the furrows, polished. Scutellum transversely, highly convex, smooth, shining. Metapleura sericeous. Tegulae black. Wings hyaline, pubescent. Legs brown-black, the base of tibiae and tarsi paler. Abdomen as long as the thorax, polished, the petiole striated, pubescent beneath, the second segment with two striated foveolæ at base.

HABITAT.—New Brunswick, N. J.

Type in National Museum.

The specimens were reared February 12, 1891, by Prof. John B. Smith, from a Cecidomyiid, *Diplosis* sp. found on pine.

Polygnotus baccharicola Ashm.

(Pl. XIII, Fig. 2, ♀.)

Can. Ent. XIX, p. 132; Cress. Syn. Hym., p. 250.

♂ ♀. Length, 1 to 1.20^{mm}. Black, shining; head broadly transverse, the vertex posteriorly transversely aciculated; face smooth, with some aciculations just above the insertion of the antennæ. Mandibles piceous. Antennæ 10-jointed, black to brown-black, the scapes sometimes pale at base and apex, with the pedicel and first and second funicular joints sometimes pale; pedicel in ♂ as long as the first and second funicular joints together; joint 1 of funicle very minute, second as thick as long; third smaller; club 5-jointed, the first joint longer than wide; the following joints to the last a little wider than long; in ♀ the club is 4-jointed, the joints stouter than in the ♂. Thorax short, ovoid, smooth, and shining, without a trace of the mesonotal furrows.

Scutellum transversely, highly convex. Metapleura sericeous. Tegulae piceous. Wings hyaline. Legs, including coxæ, rufo-piceous; trochanters, base and tips of tibiae, and the tarsi honey-yellow. Abdomen longer than the thorax, polished; the petiole striated, the second segment with two striated foveolæ at base.

HABITAT.—Florida.

Types in Coll. National Museum and Coll. Ashmead.

Many specimens reared by myself at Jacksonville, Fla., from *Cecidomyia baccharicola* Ashm. MS.

Polygnotus solidaginis Ashm.

Can. Ent. XIX, p. 131; Cress. Syn. Hym., p. 250.

♂ ♀. Length, 1 to 1.60^{mm}. Black, polished; head very wide, the vertex posteriorly strongly transversely striated; face smooth, polished. Mandibles rufous. Antennæ 10-jointed, brown, the scape often black; pedicel in ♂ longer than the first two funicular joints; joint 1 of funicle very small, yellowish; second much larger than the third, and thicker; club joints, except the first and last, hardly longer than thick, the first wider than long, the last cone-shaped and one-half longer than the preceding; club in ♀ 4-jointed, the last funicular joint obconic. Thorax ovoid, smooth, usually without a trace of furrows posteriorly, and sparsely pubescent, especially near the scutellum. Scutellum high, convex. Metapleura sericeous. Tegulæ piceous or black. Wings hyaline, pubescent. Legs, including coxæ, variable, from a pale rufous to rufo-piceous, sometimes only the tarsi are pale; sometimes trochanters, bases and tips of tibiae, and the tarsi honey-yellow, and sometimes the middle and posterior femora are black. Abdomen longer than the thorax, the petiole striated; the striæ from the basal foveolæ on the second segment extend to the middle of the segment.

HABITAT.—Florida and Missouri.

Types in Coll. Ashmead and National Museum.

Many specimens. First bred at Jacksonville, Fla., by myself from *Cecidomyia nebulosa* Ashm. MS. Dr. Riley has also reared it at Bushberg, Mo., from a Cecidomyiid gall on *Solidago*, September 21, 1876, while Miss Murtfeldt bred it from the same gall at Kirkwood, Mo., September 13, 1885.

Polygnotus pinicola, sp. nov.

♂ ♀. Length, .80 to 1^{mm}. Black, shining; head wider than the thorax, smooth, highly polished, the vertex posteriorly and the occiput not aciculated. Antennæ 10-jointed, brown; first three funicular joints small, slightly increasing in length; club 5-jointed, the joints, except the last, scarcely longer than wide; in ♂ the first funicular joint is very small, the second slightly curved, dilated, and truncate at apex; the club 6-jointed; the joints, except the last, moniliform, slightly pedicellate; the last fusiform, much longer than the preceding. Thorax short, ovoid, shining, without a trace of the mesonotal furrows. Scutellum high, transversely, convex. Metapleura nearly bare. Tegulæ piceous. Wings hyaline. Legs, including coxæ, dark rufous, the tarsi and sometimes the tip of anterior tibiae, honey-yellow or whitish. Abdomen not longer than the thorax, smooth, the petiole and the second segment at base striated.

HABITAT.—Washington, D. C.

Types in National Museum.

Described from several specimens, reared May 14, 1879, from a Cecidomyiid, *Cecidomyia pini-inopis* O. S., found on pine needles.

Polygnotus striaticeps, sp. nov.

♂ ♀. Length, 0.60 to 1.20^{mm}. Black, shining; head transverse, a little more than twice as wide as thick antero-posteriorly, and angularly produced over the eye; vertex impressed at the middle with strong transverse striæ occupying the whole occiput and extending forward as far as the front ocellus; face smooth. Mandibles black. Antennæ 10-jointed, black; pedicel about as long as the first and second funicular joints united; joint 1 of funicle very small, 2 and 3 equal, very slightly longer than thick, 4 as long as thick at tip, narrowed toward base; club 4-jointed, the joints, except the last, a little longer than thick, the last slightly longer than the preceding, cone-shaped; in ♂ the second funicular joint is curved, dilated and truncate at tip; the club 6-jointed, slightly thickened towards the tip, the joints oval-moniliform, hairy, slightly pedicellate, the last joint nearly twice as long as the preceding. Thorax ovoid, highly polished, the mesonotal furrows distinct for nearly half the length of the mesonotum posteriorly. Scutellum high, transversely, convex. Metanotum with 2 carinæ on the disk; metapleura bare, aciculated in the ♀, sericeous in ♂. Tegulæ black. Wings hyaline. Legs black, the anterior and middle tarsi white. Abdomen in ♀ as long as the head and thorax together, shorter in the ♂, the petiole striated, the second segment striated at base, the striæ extending along the sides to the middle of the segment.

HABITAT.—San Diego and Los Angeles County, Cal.

Types in National Museum.

Described from several specimens, reared in July, 1886, by A. Koebele, from a Cecidomyiid gall on an evergreen shrub (*Bigelovia* or *Artemisia* sp.) taken at Newhall, Los Angeles County, Cal.; also one female, labeled as having been reared from *Aspidiotus* on *Bigelovia*, by the same observer at San Diego, Cal.

It is scarcely necessary for me to state that this latter statement is erroneous, as we know positively no Platygasterid is parasitic on Coccids.

Polygnotus atriplicis, sp. nov.

♂ ♀. Length, 1 to 1.40^{mm}. Black, polished; vertex posteriorly transversely aciculated, the face smooth. Mandibles piceous. Antennæ 10-jointed, black; pedicel as long as the first and second funicular joints together, a little pale at tip; first funicular joint small, pale; second and third cylindric, the third shorter than the second; club 5-jointed, the first joint a little narrower than the following, contracted toward the base, the other joints to the last longer than thick, cup-shaped, outwardly at tips suberrate, the last cone-shaped, longer than the preceding. Thorax ovoid, polished, the mesonotal furrows indicated posteriorly for more than half the length of the mesonotum. Scutellum transversely high, slightly pubescent posteriorly. Metapleura seri-

ceous. Tegulæ piceous. Wings hyaline, iridescent, sparsely pubescent. Legs black, the anterior tibiæ toward tips and all tarsi honey-yellow. Abdomen not quite as long as the head and thorax together, the first segment and the second at base striated.

In the male the abdomen is oblong-oval, broadly rounded behind, the antennæ black, with the pedicel more or less pale and shorter than the second funicular joint; first funicular joint small, rounded; second much dilated, truncate at tip, narrowed at base; club 6-jointed, bristly, the joints, except the last, oval-moniliform, the last cone-shaped, nearly twice as long as the penultimate joint.

HABITAT.—Los Angeles and San Bernardino County, Cal.

Types in National Museum.

Described from several specimens, reared by A. Koebele, during April and May, from a Cecidomyiid gall on *Atriplex canescens*, found in California.

Polygnotus artemisiae, sp. nov.

♂ ♀. Length, 1 to 1.40^{mm}. Black, polished; vertex posteriorly transversely aciculated. Mandibles piceous. Antennæ 10-jointed, the scape black, the flagellum dark-brown; pedicel as long as the first and second funicular joints together; first funicular joint very small; second thickened, longer than thick; third narrower and shorter than the second; club 5-jointed, the first joint shorter than the following and not quite so thick, rounded at base; the following joints to the last very slightly wider than long, rounded at base, truncate at tip, the last cone-shaped, longer than the preceding. In the male the pedicel is not longer than the second funicle joint, which is slightly curved and dilated and truncate at tip; club 6-jointed, hairy, the joints, except the last, moniliform, slightly pedicellate, the last cone-shaped, almost twice as long as the preceding. Thorax ovoid, shining, the mesonotal furrows distinct posteriorly. Scutellum polished, transversely highly convex. Metapleura sericeous. Tegulæ black. Wings hyaline, pubescent. Legs black to brown-black, the trochanters, tips of tibiæ and tarsi honey-yellow. Abdomen as long as the head and thorax together, polished, the petiole striated, the second segment with 2 striated foveolæ at base.

HABITAT.—Lancaster, Los Angeles County, Cal.

Types in National Museum.

Described from several specimens, reared by A. Koebele, December 6, 1887, from a Cecidomyiid gall found on *Artemisia californica*.

Polygnotus virginianensis, sp. nov.

♀. Length, 1.2^{mm}. Polished black. Head about 3 times as wide as long antero-posteriorly, the occiput transversely striated, the face smooth, shining, impunctured; legs and antennæ black, articulations of legs and tarsi brown. Funicle slender, the first joint small, the second a little larger than the third; club joints about twice as long as thick

or nearly so. Thorax with distinct furrows posteriorly, the middle lobe projecting slightly upon the base of the high, convex scutellum, foveated on either side. Wings hyaline, pubescent. Abdomen conically pointed, longer than the head and thorax together, the petiole striated, segments 3, 4, and 5 with a transverse row of punctures.

♂. Length, 0.8 to 1^{mm}. Agrees with the ♀, except the antennæ are quite different, the club being 5-jointed, dilated or thickened toward the tip, the joints, except the last, being transverse, the funicular joints 1 and 2 subequal; the abdomen broadly ovate, not longer than the head and thorax together, its broadest part being wider than the thorax, the petiole and the base of second segment beneath with a tuft of woolly pubescence.

HABITAT.—District of Columbia and Arlington, Va.

Types in Coll. Ashmead.

Described from many specimens.

Polygnotus alnicola, sp. nov.

♀. Length, 1.20^{mm}. Black, shining; head $3\frac{1}{2}$ times as wide as long antero-posteriorly, the vertex posteriorly transversely aciculated, the face smooth, polished. Antennæ 10-jointed, dark brown; pedicel longer than the first and second funicular joints together, pale brown; first funicular joint very minute; second a little longer than thick, third not longer than thick; club 5-jointed, the first joint a little longer than wide, slightly narrowed toward base, the second, third, and fourth quadrate, the last ovate, longer than the preceding. Thorax ovoid, polished, the mesonotal furrows indicated only posteriorly and very faintly. Scutellum high, transversely, convex. Metapleura sericeous. Tegulae black. Wings hyaline, with pale pubescence. Legs brown, the trochanters, tips of tibiae and tarsi pale. Abdomen a little longer than the thorax, the petiole and the second segment at base striated.

HABITAT.—District of Columbia.

Types in National Museum.

Described from 4 specimens, reared July 31, 1886, from a Cecidomyiid gall in the flower bud of alder.

Polygnotus tumidus, sp. nov.

♀. Length, 1^{mm}. Black, polished; head nearly 4 times as wide as long antero-posteriorly, the vertex transversely striated. Mandibles brown. Antennæ 10-jointed, brown-black; pedicel not quite as long as the first and second funicular joints united; first funicular joint small; second and third nearly equal; club 5-jointed, very wide; the second, third, and fourth joints wider than long and at tips toward one side a little serrated, at base rounded, last joint more slender and longer than the preceding. Thorax ovoid, highly polished, the mesonotal furrows only faintly indicated posteriorly. Scutellum high, convex, polished.

Metapleura bare, faintly striated. Tegulæ rufous. Wings hyaline. Legs brownish-piceous, the trochanters, tips of anterior tibiæ, and all tarsi paler. Abdomen polished, not longer than the head and thorax together, the petiole striated, the second segment, at base on either side, with two striated foveolæ, the striæ extending to the middle of the segment.

HABITAT.—Washington, D. C.

Type in National Museum.

Bred February 25, 1881, from *Cecidomyia symmetrica* O. S., a gall common on the leaves of various oaks.

Polygnotus laticeps, sp. nov.

♂ ♀. Length, 1.2 to 1.9^{mm}. Polished black, impunctured; head very wide, fully 4 times as wide as long antero-posteriorly; the occiput transversely aciculated, the face flat and highly polished, the lateral ocelli about twice their width from the margin of the eye. Antennæ and legs black or brown-black, trochanters, base of tibiæ, and tarsi paler brown. Thorax rounded before, rather short, with distinct parapsidal furrows posteriorly, the middle lobe projecting a little upon the base of the scutellum, the scutellum highly convex, polished, deeply foveated along the base; metathorax short, the pleura faintly striated or pubescent. Abdomen broadly ovate, the apical, ventral, and dorsal segments with transverse rows of punctures. Wings hyaline. The antennæ in the ♂ terminate in a 5-jointed club, the joints, except the last, being as broad or a little broader than long; in the ♀ the joints are longer than wide.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Polygnotus hiemalis Forbes.

Platygaster hiemalis Forbes, Psyche, Vol. 5, p. 39 (1888).

♂ ♀. Length, 0.80 to 1.40^{mm}. Black, polished; head about two and a half times as wide as long antero-posteriorly, the vertex posteriorly only faintly aciculated, the face smooth, polished. Antennæ 10-jointed, brown-black, the flagellum twice as long as the scape; pedicel as long as and much stouter than the first two funicular joints; first funicular joint small, not longer than thick, yellowish basally; second larger and a little longer than the third; club 5-jointed, the joints, except the last, a little longer than wide, the last cone-shaped, one-half longer than the preceding. In the male the second funicular joint is thickened, curved, and as long as the pedicel, the latter whitish or yellowish at tip; the first funicular joint small, contracted at base; club 6-jointed, villose, the joints oblong, slightly pedicellate, the first, the shortest, narrowed basally, the last ovate, not quite twice as long as the penultimate. Thorax ovoid, polished, the mesonotal furrows del-

icate but distinct posteriorly, in the ♂ almost obliterated, the middle lobe projecting slightly upon the scutellum. Scutellum very high, transverse, convex. Metapleura subsericeous. Tegulae rufo-piceous. Wings hyaline, pubescent. Legs dark brown to piceous, trochanters, tips of anterior femora and tibiae, base of middle and posterior tibiae, and all tarsi brownish-yellow or honey-yellow, sometimes the posterior femora black. Abdomen in the ♀ about as long as the head and thorax together, in ♂ shorter; in both sexes, the petiole and the foveolae at base of the second segment striated.

HABITAT.—Western States.

Types in the Illinois State Laboratory of Natural History and National Museum.

This species seems to have been first reared by Dr. Riley, from specimens of the Hessian fly (*Cecidomyia destructor* Say), August 16, 1876, received from Blair, Nebr. It has, however, since been bred from the same fly, by various persons in the Western States. Prof. Forbes reared it in 1888 at Champaign, Ill.; Prof. Cook, of Agricultural College, Mich., in 1890; and Prof. Webster at Laporte, Ind., in 1889.

I know of no specimens reared in the Eastern States. Can the species be moving Eastward?

***Polygnotus proximus*, sp. nov.**

♂ ♀. Length, 0.80 to 1.20^{mm}. Black, polished; head thrice as wide as long antero-posteriorly, the vertex posteriorly transversely aciculated, the face polished. Mandibles piceous. Antennae 10-jointed, brown-black, much slenderer than in *P. hiemalis*, the flagellum slightly more than twice the length of the scape; pedicel long, cylindric, as long as the first and second funicular joints together; first funicular joint longer than thick, whitish at base; second much longer and thicker; third shorter than the second and constricted at apex; club 5-jointed, slender, the joints nearly twice as long as thick, the last fusiform, longer than the preceding. In the male the pedicel is oval, not quite as long as the first and second funicular joints together; first funicular joint small, moniliform; second larger, dilated and truncate at tip; club 6-jointed, hairy, the joints, except the last, moniliform, not longer than thick, slightly pedicellate, the last cone-shaped, nearly twice as long as the preceding. Thorax ovoid, polished, the mesonotal furrows indicated only posteriorly, the middle lobe projecting a little on the base of the scutellum, the parapsides at base with a tuft of pubescence. Scutellum high, transverse; convex, with a little pubescence on either side posteriorly. Metapleura sericeous. Tegulae black. Wings hyaline, iridescent, pubescent. Legs brownish-piceous, the anterior knees, tips of anterior tibiae and all tarsi, honey-yellow. Abdomen in ♀ pointed at tip, slightly longer than the head and the thorax together, in ♂ oblong-oval, not longer than the thorax, the petiole striated, the second segment with

two deep elongated foveolæ at base, the space between them showing some longitudinal striæ, otherwise the whole surface is highly polished, black.

HABITAT.—District of Columbia.

Types in National Museum.

Described from several specimens bred by Dr. Riley from the Cypress Cecidomyiid (*Cecidomyia c. ananassa* Riley); no date of rearing is given.

Polygnotus viticola, sp. nov.

♂ ♀. Length, 1.20 to 1.40^{mm}. Black, polished; head a little more than thrice as wide as long antero-posteriorly, the vertex posteriorly transversely aciculated, the face smooth. Mandibles rufous. Antennæ 10-jointed, brown or brown-black, the flagellum not quite twice as long as the scape; pedicel hardly as long as the first and second funicular joints together and not as thick at tip as the second funicular joint; first funicular joint minute, the second and third about of an equal length, but the second the thicker; club 5-jointed, the joints briefly pedicellate, the first four joints as wide as long, cup-shaped, the last cone-shaped, longer than the penultimate.

In the ♂ the flagellum is covered with short, white, stiff hairs; the second funicular joint is larger and stouter than the pedicel; the club 6-jointed, the joints, except the last, oval-moniliform, pedicellate, the last cone-shaped, one and one-half times as long as the penultimate Thorax ovoid, polished, the mesonotal furrows very faintly indicated posteriorly, more distinct in the female, the basal point of the middle lobe projecting slightly upon the scutellum, the lateral lobes at base slightly pubescent. Scutellum transverse, high, convex, very sparsely pubescent. Metapleura sericeous. Tegulæ rufo-piceous. Wings hyaline, pubescent. Legs, including coxæ, rufo-piceous or brownish, the tarsi paler, or yellowish. Abdomen ovate, scarcely longer than the head and thorax together, pointed at tip, the petiole striated, the second segment with two long, striated foveolæ at base, one on either side, the third and fourth, with a transverse row of faint punctures, the fifth and following segments closely punctate; the third, fourth, and fifth ventral segments also show rows of punctures. In the ♂ the abdomen is shorter, oblong-oval, the third, fourth, fifth, and sixth segments with a single row of punctures at base, while the corresponding ventral segments show rows of very faint punctures.

HABITAT.—Washington, D. C.

Types in National Museum.

Described from several specimens, reared March 31, 1882, from a Cecidomyiid gall on the petiole of a grapevine, collected on the grounds of the Department of Agriculture.

Polygnotus utahensis, sp. nov.

♂ ♀. Length, 1^{mm}. Black, polished; head thrice as wide as thick antero-posteriorly, the vertex in ♀ angularly produced over the eye, but not in the ♂, posteriorly not aciculated, or only faintly aciculated in ♀, perfectly smooth in ♂, the face smooth. Antennæ 10-jointed, black or brown-black; pedicel a little longer than the second funicular joint; first funicular joint very small, rounded; second and third about equal; club 5-jointed, the joints, except the last, longer than thick. In the ♂ the second funicular joint is distinctly longer than the pedicel; club 6-jointed, the joints about twice as long as thick, pedicellate.

Thorax ovoid, polished, with the mesonotal grooves slightly indicated posteriorly and with some pubescence just in front of the scutellum. Scutellum in ♂ subconvex, pubescent with a slight median carina; in ♀ high, transversely, convex, polished. Metapleura in ♀ bare, finely sculptured; in ♂ sericeous. Tegulæ rufo-piceous. Wings hyaline, pubescent. Legs black or brown-black, tarsi piceous, in ♂ the knees, tips of anterior tibiae, and all tarsi, honey yellow. Abdomen not longer than the thorax, polished, the petiole and foveolæ at base of second segment, striated.

HABITAT.—Pariah, Utah.

Types in National Museum.

Described from two specimens, 1 ♂, 1 ♀, received from A. L. Siler, and bred during July, 1881, from a Cecidomyiid gall on *Artemisia 3-dentata*.

Polygnotus cynipicola, sp. nov.

♂ ♀. Length, 0.60 to 0.80^{mm}. Black, polished; head $3\frac{1}{2}$ times as wide as thick antero-posteriorly, the vertex posteriorly very faintly aciculated, the face smooth, polished. Antennæ 10-jointed, brown-black; pedicel as long as the second funicular joint, piceous; first funicular joint very minute, yellowish, third, longer than the second; club 5-jointed, broad, the joints, except the last, slightly wider than long; in ♂ the club joints are longer than wide, covered with white bristles, the last pointed, fusiform. Thorax ovoid, polished, the mesonotal furrows faintly indicated posteriorly, the basal tips of the middle lobe slightly elevated. Scutellum high, transversely convex, sparsely pubescent posteriorly. Metapleura bare, aciculated, in ♂ slightly sericeous. Tegulæ black. Wings hyaline, pubescent. Legs black or brown-black, the tip of anterior tibiae and all tarsi, honey-yellow. Abdomen not longer than the thorax, polished, the petiole and the foveolæ at base of second segment striated, the third and following segments with transverse rows of punctures.

HABITAT.—Arlington, Va.

Types in National Museum.

Described from several specimens, bred July 3, 1883, from a Cynipid gall, *Neuroterus batatus* Fitch.

Polygnotus eurotiæ, sp. nov.

♀. Length, 1 to 1.20^{mm}. Black, polished; head thrice as wide as thick antero-posteriorly, the vertex perfectly smooth. Antennæ 10-jointed, black; pedicel slightly longer and thicker than the first and second funicular joints together, the three funicular joints cylindrical, of a uniform thickness, the first, the shortest, the second, the longest, but only a little longer than the third; club 5-jointed, slender, the joints all distinctly longer than thick, about 1½ times as long as thick, the last long, conical. Thorax ovoid, polished, the mesonotal grooves distinct posteriorly for half the length of the mesonotum, the base of the lateral lobes with some short striæ. Scutellum high, transversely, convex, slightly pubescent posteriorly. Metapleura sericeous. Tegulæ rufo-piceous. Wings hyaline, pubescent. Legs brown-black, anterior knees, tips of tibiæ and all tarsi honey-yellow. Abdomen as long as the thorax, polished, the petiole and foveolæ at base of the second segment striated.

HABITAT.—San Bernadino County, Cal.

Types in National Museum.

Described from two specimens bred April 17, 1887, by A. Koebele, from a Cecidomyiid gall on *Eurotia canata*.

Polygnotus rubi, sp. nov.

♀. Length, 1^{mm}. Black, polished; head thrice as wide as thick antero-posteriorly, the vertex not aciculated. Antennæ 10-jointed, brown, the scape and pedicel yellowish; pedicel as long as the first and second funicular joints together; first funicular joint very minute; second and third about equal; club 5-jointed, slender, the joints, except the last, not longer than thick, cup-shaped. Thorax ovoid, polished, the mesonotal furrows only slightly indicated posteriorly, the basal tip of the middle lobe slightly elevated, the parapsides at base with a small tuft of pubescence. Scutellum high, transversely convex, posteriorly pubescent. Metapleura sericeous. Tegulæ rufo-piceous. Wings hyaline, pubescent. Legs black, or brown-black, the tips of anterior femora, their tibiæ, and all tarsi, honey-yellow. Abdomen polished, about as long as the head and thorax together, pointed at tip; the petiole and the foveolæ at base of second segment striated.

HABITAT.—Arlington, Va.

Types in National Museum.

Described from two specimens, bred March 30, 1886, from *Cecidomyia farinosa* O. S. found on blackberry.

Prof. John B. Smith has also reared the same insect from a gall on blackberry at New Brunswick, N. J.

Polygnotus asynaptæ, sp. nov.

♂ ♀. Length, 0.80 to 1.20^{mm}. Black, polished; head in ♀ about 3½ times as wide as thick antero-posteriorly, but in the ♂ scarcely thrice

as wide as thick, the vertex posteriorly not or very faintly aciculated. Antennæ 10-jointed, black, the flagellum slender, twice as long as the scape; pedicel about as long and thick as the second club joint; first funicular joint very minute, second and third, longer, equal; club 5-jointed, the first joint a little shorter and narrower than the second; second, third and fourth equal in length, very slightly longer than thick, the last cone-shaped, longer than the preceding. In the ♂ the pedicel is not longer than the second funicular joint; the first funicular joint is annular, fully as wide as the pedicel, the second funicular joint is a little shorter than the first club joint; club 6-jointed, cylindrical, the last joint enlarged, fusiform, all the other joints pedicellated, about equal in length, cylindric, about twice as long as thick. Thorax ovoid, highly polished, the mesonotal furrows distinct posteriorly for half the length of the mesonotum, the parapsides at base with slight tufts of glittering white hairs. Scutellum high, convex, sparsely pubescent posteriorly. Metapleura bare, not perfectly smooth. Metanotum very short, with a deep central groove. Tegulae black. Wings hyaline, covered with a short pubescence.

Legs black or piceous-black, the tip of anterior tibiae and the anterior and middle tarsi brownish. Abdomen polished, pointed in the ♀ and scarcely longer than the head and thorax united; in the ♂ oblong-oval; in both sexes the petiole is bare, fluted, the second segment with two long, striated foveolæ at base.

HABITAT.—Maywood, Ill.

Types in National Museum.

Described from several specimens, reared January 22 and February 1 and 3, 1890, by Prof. O. S. Westcott, from a willow Cecidomyiid (*Asynapta*, sp.).

Polygnotus huachucae, sp. nov.

♂ ♀. Length, 0.80 to 1.40^{mm}. Black, polished; head about thrice as wide as thick antero-posteriorly, the vertex posteriorly showing faint traces of aciculations. Mandibles piceous. Antennæ 10-jointed, black, the flagellum one and a half times as long as the scape; pedicel a little longer than the first and second funicular joints together; first funicular joint very minute, pale; second and third longer, the second the larger; club 5-jointed, the first joint smaller than the three following, which are a little wider than long, rounded at base, truncate at tip, the last cone-shaped, a little longer than the preceding. In the ♂ the flagellum is not quite twice as long as the scape, the pedicel equal in length with the second funicular joint, first funicular joint annular, second not quite as long as thick, obliquely truncate at tip, club 6-jointed, covered with a short, grayish pubescence, the joints sub-moniliform, the last cone-shaped, not quite twice as long as the preceding. Thorax ovoid, polished, the mesonotal furrows indicated only posteriorly, the lateral lobes posteriorly bare, without tufts of hairs.

Scutellum smooth, convex. Metapleura subsericeous, aciculated. Tegulæ black. Wings hyaline, strongly iridescent, sparsely pubescent. Legs piceous-black, the anterior tibiæ and all tarsi whitish or honey yellow. Abdomen as usual in the sexes, in the ♀ pointed and as long as the head and thorax together, the petiole and the foveolæ at base of the second segment striated.

HABITAT.—Fort Huachuca, Ariz.

Types in National Museum.

Described from several specimens, reared June 5, 1882, from a Cecidomyiid stem gall on sunflower, and from a Cecidomyiid pod-like gall on an unknown plant, sent to the Department by H. K. Morrison.

***Polygnotus actinomeridis*, sp. nov.**

♂ ♀. Length, 0.60 to 1.20^{mm}. Black, polished; head 2½ times as wide as thick antero-posteriorly, the vertex posteriorly very faintly aciculated, the face smooth, with transverse aciculations above the insertion of the antennæ. Mandibles piceous. Antennæ 10-jointed, dark-brown, the scape paler toward base; pedicel as long as the second and third funicular joints together; first funicular joint very small; second stouter and longer than the third; third a little longer than the first; club 5-jointed, the joints longer than thick. In the ♂, the second funicular joint is dilated and truncate at tip, the club 6-jointed, the joints oval-moniliform, the first the smallest, the last enlarged, fusiform, stouter, and twice as long as the preceding. Thorax ovoid, polished, the mesonotal furrows distinct posteriorly; no tufts of pubescence at base of parapsides. Scutellum high, convex, polished, with a slight silky pubescence. Metapleura subsericeous, aciculated. Tegulæ rufo-piceous. Wings hyaline, pubescent. Legs dark-rufous, the anterior tibiæ, and all tarsi honey-yellow. Abdomen about as long as the head and thorax together, polished, the petiole and the foveolæ at base of second segment striated, the ventral segments 3, 4, 5, and 6 with a transverse row of fine punctures.

HABITAT.—Washington, D. C.

Type in National Museum.

Described from 4 specimens reared April 23, 1884, from a Cecidomyiid gall on *Actinomeris squarrosa*.

***Polygnotus vernoniæ*, sp. nov.**

♂ ♀. Length 0.60 to 0.80^{mm}. Black, polished; head nearly thrice as wide as thick antero-posteriorly; the vertex not aciculated, the face smooth. Mandibles brown. Antennæ 10-jointed, brown or dark brown; pedicel longer than the first and second funicular joints together; first funicular joint very minute, pale, second and third about as long as thick, equal; club 5-jointed, the joints very slightly longer than thick, the middle joints wider than the basal and apical joints. In the ♂ the

second funicular joint is dilated, the club 6-jointed, the last enlarged, oblong, the other joints moniliform. Thorax ovoid, polished, the mesonotal furrows only slightly indicated posteriorly, the basal tip of the middle lobe slightly elevated, upon the base of the scutellum; the parapsides with a slight tuft of pubescence at base. Scutellum high, transverse, convex. Metapleura covered with a white, glittering pubescence. Legs brownish-piceous; front legs, tips of middle and posterior tibiae, and all tarsi honey-yellow. Abdomen pointed in ♀, a little longer than the head and thorax together; shorter and oblong-oval in ♂, the petiole and foveolæ at base of second segment striated; the third and following segments, in the ♂, with a row of punctures at base.

HABITAT.—Arlington, Va.

Types in National Museum.

Described from several specimens, reared June 15 and 17, 1886, from a Trypetid gall on *Vernonia noveboracensis*.

***Polygnotus floridanus*, sp. nov.**

♂. Length, 1.4^{mm}. Black; antennæ, except the club, and the legs, except the posterior pair, yellow; club black; posterior coxæ, femora, and tibiae dusky; wings hyaline, almost devoid of pubescence, the tegulæ black.

The head is wide between the eyes and highly polished; mandibles piceous; palpi pale. Antennæ 10-jointed, the pedicel long, as long as the 3 funicular joints united, the third funicular joint the widest, club joints black, moniliform, the last fusiform, twice as long as the preceding.

Mesonotal furrows indicated posteriorly; scutellum cushion-shaped, the metapleura covered with a white pubescence.

Abdomen pear-shaped, not as long as the thorax, smooth, polished, except the petiole, which is wider than long, striated, and some striae at base of second segment.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Distinguished by the color of the legs and the peculiarity of its antennæ, the pedicel being unusually long for a species in this genus.

***Polygnotus eauræ*, sp. nov.**

♂. Length, 1.60^{mm}. Black, polished; head two and a half times as wide as thick antero-posteriorly, the vertex posteriorly not or very faintly aciculated. Mandibles rufous. Antennæ 10-jointed, brown-black; pedicel one and a half times as long as thick; first funicular joint small, rounded; second longer than thick, slightly curved; club 6-jointed, the joints, except the last, oval-moniliform, slightly pedicellate, the last cone-shaped, a little stouter and about twice as long as the preceding. Thorax ovoid, polished, the mesonotal furrows indicated posteriorly. Scutellum transverse, convex, sparsely covered with

a fine silky pubescence. Metapleura sericeous. Tegulae rufous. Wings hyaline, pubescent. Legs, including coxae, dark rufous. Abdomen oblong-oval, about as long as the thorax, the petiole and the foveolae at base of second segment striated.

HABITAT.—St. Louis, Mo.

Types in National Museum.

Described from 2 ♂ specimens, bred February 24, 1872, by Dr. C. V. Riley, from the Tenthredinid gall *Euura s.-nodus* Walsh.

The species is unquestionably parasitic on the inquilineous Cecidomyious flies known to inhabit this gall, and not on the Tenthredinid.

***Polygnotus angulatus*, sp. nov.**

♂. Length, 1.2^{mm}. Black, shining; head wide, shagreened, the vertex angularly produced over the eyes, transversely aciculated; lateral ocelli far away from the eye. Antennae 10-jointed, black, the pedicel as long as the first and second funicular joints united, first funicular joint minute, the second dilated toward apex, the apex truncate; club 6-jointed, the first joint slightly the smallest, the others, except the last, only a little longer than thick.

Mesonotum with two distinct furrows; scutellum transversely elevated, convex; metathorax very short, the pleura pubescent. Wings hyaline, the tegulae black. Legs black, trochanters, anterior tibiae toward apex, and all tarsi pale brown, the tarsi not longer than their tibiae, the basal joint as long as the three following joints united. Abdomen oblong-oval, not longer than the thorax, or very slightly longer, smooth, polished, the petiole transverse, striated, the second segment with striate foveolae at base.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

***Polygnotus striaticollis*, sp. nov.**

♂. Length, 1.4^{mm}. Black, shining; the head transverse, shagreened; the lateral ocelli away from the eye margin; thorax with two distinct furrows; legs rufo-piceous, articulations, base of tibiae and tarsi yellowish or pale brown; wings hyaline, tegulae blackish. The antennae are 10-jointed, brown; the pedicel much longer than the first and second funicular joints, which are small, the second being wider at apex than long; club 6-jointed, pilose, the joints loosely joined and all, except the last, transverse-moniliform. Pronotum at sides distinctly striated, the mesopleura polished with a femoral impression, the scutellum highly convex, the metathorax sparsely pubescent, the pleura bounded by a carina above. Abdomen ovate, as long as the thorax, the petiole and the second segment at base striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Polygnotus lævicollis, sp. nov.

♂. Length, 1^{mm}. Black, shining; the head transverse with the lateral ocelli twice their width from the eye margin; antennæ brown, the scape toward apex and the pedicel at tip yellowish; legs rufous; wings hyaline; mesonotal furrows distinct. The antennæ are 10-jointed, the scape clavate, as long as the flagellum; pedicel obconic, as long as the first and second joints united, the latter closely joined, swollen or dilated; club 6-jointed, all the joints, except the last, transverse, the last conical, a little more than twice the length of the penultimate. Pronotum perfectly smooth, highly polished, the metapleura with a fine silvery pubescence. Abdomen oblong-oval, polished, the petiole short, striated.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Taken by Mr. E. A. Schwarz.

Polygnotus astericola, sp. nov.

♂ ♀. Length, 0.80 to 1^{mm}. Black, polished; head thrice as wide as thick antero-posteriorly, the vertex not or very faintly aciculated, the face smooth, polished. Mandibles rufo-piceous. Antennæ 10-jointed, dark brown; pedicel twice as long as thick, first funicular joint minute, pale, a little longer than thick; second larger, very little longer than the third; club 5-jointed, rather slender, the joints about as wide as long. In the ♂ the second funicle joint is as long as the pedicel, a little curved, dilated and truncate at tip, the club 6-jointed, the joints oval-moniliform, slightly pedicellate, the last cone-shaped, a little stouter and twice as long as the preceding. Thorax ovoid, polished, the mesonotal furrows indicated posteriorly, the basal tip of the middle lobe very slightly elevated, the parapsides with a tuft of pubescence at base. Metapleura sericeous. Tegulae black. Wings hyaline, pubescent. Legs, including coxae, rufo-piceous, the trochanters, knees, tips of tibiae, (the anterior tibiae almost entirely) and all tarsi, honey-yellow. Abdomen not longer than the head and thorax together, oblong-oval, broader than, and not so pointed as in *P. vernoniae*, the basal segment and the foveolae on the second striated; the ♂ abdomen shorter and without row of punctures on the ventral segments.

HABITAT.—Holderness, N. H.

Types in National Museum.

Described from several specimens, reared May 24, 1884, from a Cecidomyiid gall on Aster, collected by A. Koebele.

Polygnotus coloradensis, sp. nov.

♂ ♀. Length, 1^{mm}. Black, polished; head thrice as wide as thick antero-posteriorly, the vertex very faintly, microscopically shagreened, the face smooth, highly polished, the lateral ocelli as far from the margin of the eye as to the front ocellus. Mandibles piceous-black. An

tennæ 10-jointed, black, the pedicel stouter than any of the club joints and about $2\frac{1}{2}$ times as long as thick; first and second funicular joints small, the second slightly the longer; the third and first joints of club about equal, longer than the second, the club very gradually thickened toward the tip, the joints, except the last, $1\frac{1}{2}$ times as long as thick, the last joint stouter and longer than the penultimate, ovate. In the ♂ the pedicel is as long as the first and second funicular joints together, pale at tip, the first funicular joint very minute, the club 6-jointed, cylindrical, the joints nearly of an equal length, about twice as long as thick, the last conic, one-half longer than the preceding. Thorax ovoid, polished, the mesonotal furrows complete, distinct; the middle lobe posteriorly extending slightly upon the base of the scutellum; no tufts at the base of the lateral lobes. Scutellum transversely, convex, shining, very slightly pubescent. Metapleura covered with a whitish pubescence. Legs black or brown-black, the tarsi paler; sometimes the tip of anterior tibiæ, knees, and all tarsi, honey-yellow. Abdomen as long as the head and thorax together, in the ♀ pointed at tip, in the ♂ rounded, the petiole and the rather deep foveolæ at base of the second segment striated.

HABITAT.—Fort Garland, Colo.

Types in National Museum.

Described from several specimens reared June 25, 1883, from a Cecidomyiid gall on sage bush, collected by L. Bruner.

Polygnotus filicornis, sp. nov.

♂ ♀. Length, 1 to 1.5^{mm} . Polished, black, impunctured; head transverse, about 3 times as wide as long antero-posteriorly, the occiput faintly alutaceously sculptured, the lateral ocelli a little more than their width from the margin of the eye. Antennæ 10-jointed, very long and slender, subclavate, reaching beyond the middle of the abdomen; pedicel slender, nearly as long as the first and second funicular joints together; funicular joints slender, and merging so gradually into the club joints that the club can scarcely be separated, the last four joints about $2\frac{1}{2}$ times as long as thick. Thorax polished, with two distinct furrows, mesopleura deeply impressed at the middle; scutellum highly convex; metathorax sparsely pubescent. Wings hyaline. Legs black, tips of anterior tibiæ and the tarsi pale brownish or fuscous. Abdomen pointed-ovate, smooth, shining, striated at base, about as long or a little longer than the head and thorax together.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

Polygnotus californicus, sp. nov.

♂ ♀. Length, 1.2 to 1.5^{mm} . Very close to *P. coloradensis*, but with the following differences: The vertex posteriorly shows faint traces of aciculations; in ♀ the first three funicular joints are very nearly of an equal

length, the third, slightly the thickest; in the ♂ the second funicular joint is stout and slightly curved, the club joints being not more than $1\frac{1}{2}$ times as long as thick; the three middle joints outwardly subserrate, the last conically pointed, much longer than the preceding; the legs are black, the tip of anterior tibiæ and tarsi fuscous, while the wings are slightly smoky.

HABITAT.—San Francisco and Alameda, Cal.

Types in National Museum.

Described from many specimens, reared by A. Koebele, January 10 and 23, 1883, and July 16 and December 17 and 19, 1885, from a Cecidomyiid gall found on *Baccharis pilularis*.

PLATYGASTER Latreille.

Gen. Crus. et Ins., IV, p. 31 (1809); Förster Hym. Stud., II, p. 108 (1856).

(Type *P. ruficornis* Latr.)

Head transverse, rarely subquadrate, the vertex somewhat narrowed, convex, the lateral ocelli usually far away from the eye margin but still nearer to it than to the front ocellus.

Antennæ 10-jointed, the scape subclavate, the flagellum ending in a 6-jointed, filiform club, the second joint in the male a little swollen and curved.

Thorax ovate, usually more elongated than in *Polygnotus*, the collar usually distinct, the mesonotal furrows distinct, the scutellum convex, unarmed, the metathorax short, carinated.

Wings veinless, pubescent.

Abdomen oblong-oval or ovate, the petiole usually distinct, at least as long as wide, or a little longer, striated, the second segment very long, striate at base.

Legs long, clavate; the tibiæ slender, the tarsi very long, the hind tarsi being much longer than their tibiæ.

The genera *Platygaster* and *Isocybus* are exceedingly closely allied, but the head in *Isocybus* is more quadrate and the lateral ocelli are nearer to the front ocellus than to the margin of the eye.

I am not fully satisfied that they should be kept separate, although, so far, the position of the lateral ocelli seems sufficient to separate them.

The head in *Platygaster Herrickii* Packard and the position of the ocelli is, however, very similar to *Isocybus*.

TABLE OF SPECIES.

FEMALES.

Coxæ black.

Legs yellow or golden yellow, antennæ yellow, the club fuscous.

Vertex rugose, with raised lines in the middle; face closely punctulate, with some transverse lines on lower part.

Pediceal very long; first funicular joint a little longer than wide, the second very long, twice as long as the first; club 6-jointed, the joints, except the last, transverse.....P. CARYÆ Ashm.

Legs piceous or rufo-piceous, anterior tibiæ and base of middle and posterior tibiæ pale or honey-yellow.

Head including face, finely, closely punctate.

Pedicel about as long as the first two funicular joints together, the first funicular joint subtriangular, small, the second much thicker and about as long as the longest club joint.....P. HERRICKII Pack.

Head finely, closely punctate, the face with a large polished space in the middle, transversely striated on lower part.

Pedicel not as long as the first two funicular joints together, the first funicular joint a little longer than thick, narrowed, the second thicker and slightly shorter than any of the following..P. OBSCURIPENNIS Ashm.

MALES.

Coxæ black.

Legs yellow.

Head finely rugoso-punctate.

Face minutely punctate, with no grooved line; antennæ brownish-yellow, the second funicular joint as long as the long pedicel; club joints not longer than thick.....P. CARYÆ Ashm.

Face highly polished, with a central grooved line; antennæ brownish-yellow, the pedicel as long as the first and second funicular joints together, the first very small, second a little thickened and curved; club joints oval-moniliform, the last fusiform, nearly twice as long as the preceding.....P. FLORIDENSIS Ashm.

Legs piceous or rufo-piceous; antennæ black or brown-black.

Head closely punctured or shagreened.

Face punctate, no transverse striæ above antennæ; club joints twice as long as thick, subpedicellate.....P. HERRICKII Pack.

Face highly polished, with transverse striæ above antennæ.

Second funicular joint not swollen; club joints broader than long; wings dusky.....P. OBSCURIPENNIS Ashm.

Second funicular swollen; wings hyaline.

Club joints about twice as long as thick.....P. APHIDIS, sp. nov.

Club joints thrice as long as thick.....P. GRACILIS Ashm.

Face transversely aciculated.

Mesonotum and all pleura longitudinally striated..P. ACICULATUS, sp. nov.

Platygaster caryæ, sp. nov.

♂ ♀. Length, 1.50 to 2^{mm}. Black, shining; vertex finely rugose, the face finely, closely punctate, with some transverse aciculations just above the insertion of the antennæ. Mandibles pale brown. Antennæ 10-jointed, yellow; pedicel long, as long as the second funicular joint, first elongated, a little shorter than the second; club 6-jointed, fuscous, the joints, except the last, wider than long, truncate at tip, rounded at base. Thorax finely punctulate, with two distinct furrows, the middle lobe posteriorly with a slight central line. Scutellum transverse, convex. Metapleura and hind coxæ beneath sericeous. Tegulæ piceous. Wings hyaline. Legs bright yellow or brownish-yellow, the coxæ black, the posterior femora and sometimes the tibiæ dusky. Abdomen oblong-oval, not longer than the thorax, the first segment and the second, at base, striated, sparsely pubescent.

In the ♂ the antennæ are always pale, the club very slightly darker; the second funicular joint elongated, somewhat thickened and truncate at tip, the first only a little longer than thick; the club-joints close, not loosely joined, a little longer than thick.

HABITAT.—Jacksonville, Fla.; District of Columbia, and St. Louis, Mo.

Types in Coll. Ashmead and National Museum.

The species is a common parasite of Cecidomyiid galls on hickory trees.

***Platyaster floridensis* Ashm.**

(Pl. XIII, Fig. 3, ♀.)

Can. Ent., XIX, p. 132, ♀.; Cr. Syn. Hym., p. 250.

♂ ♀. Length, 1 to 1.5^{mm}. Polished, black; head transverse, as wide as the thorax, the vertex posteriorly aciculated, the face smooth, highly polished; mandibles yellowish. Antennæ 10-jointed; in ♂ pale brownish-yellow, the pedicel as long as the second funicular joint, the first very small, closely joined to the second, the second swollen, slightly curved, truncate at tip, club 6-jointed, the joints, except the last, submoniliform, the last cone-shaped, twice as long as the preceding. Thorax ovoid, smooth, the parapsidal furrows only slightly indicated; scutellum convex, slightly pubescent; metapleura sericeous; tegulæ piceous. Wings hyaline, pubescent. Legs pale brownish-yellow, the hind coxæ piceous or fuscous. Abdomen oval, not longer than the thorax, the petiole roughened, pubescent. In the ♀ the abdomen is a little longer, more pointed; the antennæ, except the club, yellow, club dark brown, 6-jointed, moniliform, the last joint fusiform; the pedicel is about as long as the first funicular joint, but thicker; funicular joints cylindrical, the first more than twice as long as thick, the second very much lengthened; legs yellowish, the hind coxæ and femora and tibiæ toward tips fuscous or blackish.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

***Platyaster Herrickii* Pack.**

Third Rep. U. S. Ent. Comm., p. 220; Riley, Proc. U. S. Nat. Mus., VIII, p. 420, Pl. XXIII, Fig. 6, ♂; Ashm., Can. Ent., XIX, p. 132; Cress. Syn. Hym., p. 250.

Aneurhynchus anenus Prov. Add. p. 176, ♂.

♂ ♀. Length 1.50 to 1.80^{mm}. Black, shining, finely punctate, or microscopically shagreened; head transverse, punctate, the face more finely punctate; mandibles rufous. Antennæ 10-jointed, black; pedicel as long as the first two funicular joints together; the first funicular joint subtriangular, small, the second thicker and as long as the longest club joint; club 6-jointed, the joints, except the last, very nearly equal length, the first slightly the narrowest, less than twice as long as thick, and truncate at tip, the last cone-shaped, narrower and slightly

longer than the preceding. In ♂ the antennæ are slightly longer, cylindrical, with a short whitish pubescence; the pedicel is longer than the second funicular joint; the first very minute, closely joined to the second; the second swollen, nearly as broad as long; the club 6-jointed, the first joint the shortest, the last the longest, cone-shaped, the intermediate joints twice as long as thick, subpedicellate. Thorax ovate, a little more than twice as long as broad; parapsidal furrows deep, distinct; scutellum rounded, convex; the metathorax short, emarginate behind. Wings hyaline, veinless, although sometimes the base of the submarginal vein is quite distinctly visible as a yellowish streak. Legs piceous-black or rufo-piceous; sometimes the base of the tibiæ and the base of the tarsi yellowish; tarsi most frequently fuscous.

HABITAT.—Western and Northern States.

Types in National Museum. A common parasite of the Hessian fly (*Cecidomyia destructor* Say).

From Mr. W. H. Harrington, I received a ♂ specimen of this species labeled "*Aneurhynchus aneurus* Prov. Type".

Platygaster obscuripennis, sp. nov.

♂ ♀. Length 1.40 to 1.80^{mm}. Very closely allied to *P. Herrickii*, but a little more slender, the face with a large polished space in the middle. Mandibles pale. Antennæ slender, the flagellum dark brown; pedicel not quite as long as the first two funicular joints together, but longer than the second joint alone, the tip yellowish; the first funicular joint small, but longer than thick; second twice as long as thick; club 6-jointed, the first narrower than the others, the joints beyond to the last about equal, longer than thick, the last conic, longer than the preceding. Sides of the parapsides smooth with a distinct grooved line parallel with the pronotal suture. Wings dusky, or subhyaline. Abdomen not longer than the thorax, the foveolæ at base of second segment and the first segment both above and beneath covered with a silky pubescence. The ♂ differs decidedly from *P. Herrickii* in having the first five joints of the club wider than long, the last cone-shaped, about twice as long as the preceding, while the second funicular joint is but slightly swollen and slightly curved.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from specimens received from Mr. W. H. Harrington.

Platygaster aphidis sp. nov.

♂. Length, 1.6^{mm}. Black, shining; the head posteriorly almost smooth, not distinctly punctate; face polished. Antennæ 10-jointed, black; pedicel as long as the first and second funicular joints together, the first small, subtriangular, closely united to the second, the second somewhat swollen and slightly twisted; club 6-jointed, the joints about

twice as long as thick, subpedicellate. Thorax long-ovoid, smooth, shining, the furrows distinct; scutellum smooth, shining, convexly high; metapleura bare; tegulae black. Wings hyaline, nearly bare or but slightly pubescent. Legs brown-black, the tarsi paler, all the coxae distinctly black. Abdomen oblong-oval, nearly twice as wide as the thorax, the petiole rugose, subpubescent.

HABITAT.—Richfield Springs, N. Y.

Type in National Museum.

Described from 1 ♂ specimen, reared February 9, 1887, from an Aphis on *Chenopodium album*. The broad abdomen and the length of the club joints readily distinguish the species. The Aphis from which this species was bred was undoubtedly infested with Cecidomyious parasites, upon which the *Platygaster* is a secondary parasite.

Platygaster gracilis Ashm.

Can. Ent., XIX, p. 132; Cress. Syn. Hym., p. 250.

♂. Length, 1.5^{mm}. Black, shining; the head posteriorly microscopically punctulate; face smooth, highly polished, with a slight central impressed line from the middle ocellus. Antennae 10-jointed, black; pedicel long, yellowish at extreme tip; first funicular joint small, second somewhat swollen, slightly curved and shorter than the first club joint; club 6-jointed, cylindrical, the joints twice as long as thick. Thorax long-ovoid, smooth, shining, the furrows very distinct; metapleura sericeous; tegulae black. Wings long, hyaline, pubescent. Legs rust-brown, the anterior pair more yellowish, the middle and posterior femora and tibiae dusky toward tips; all coxae black. Abdomen oblong-oval, narrowed toward base, as long as the thorax, the petiole more or less pubescent.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Platygaster aciculatus, sp. nov.

♂. Length, 1.4^{mm}. Black, shining; vertex, occiput, and cheeks finely shagreened; face transversely aciculated; sides of prothorax, mesonotum, mesopleura beneath the wings and the metapleura all distinctly longitudinally aciculated; the parapsides, scutellum, and the lower portion of mesopleura smooth, polished. Antennae 10-jointed, rufo-piceous; the flagellum subclavate; pedicel longer and stouter than the first and second funicular joints together, the latter scarcely longer than thick, the following joints to the last transverse, the last short, conic. Parapsidal furrows deep, distinct. Scutellum elevated, cushion-shaped. Legs rufo-piceous; tips of anterior femora and their tibiae and the articulations of the middle legs yellowish. Wings clear hyaline, entirely devoid of pubescence. Abdomen oval, smooth, polished, the

petiole not longer than thick, striated and pubescent, the second segment with some striæ at base.

HABITAT.—Pennsylvania.

Type in Berlin Museum.

Described from a single specimen labeled "Penn., Zimmermann."

ISOCYBUS Förster.

Hym. Stud., II, p. 108 (1856).

(Type, *I. grandis* Nees.)

Head quadrate or subquadrate, the vertex broad, the cheeks full, the occiput slightly emarginate, not or very delicately margined; ocelli 3, triangularly arranged, the lateral being placed far away from the margin of the eye; eyes ovate.

Antennæ inserted at the clypeus, 10-jointed, the scape subclavate, slightly bent; in the ♀ the flagellum is subfiliform, the six terminal joints thicker than the preceding, submoniliform, the first and second joints very slender; in the ♂ the second funicular joint is usually slightly swollen and slightly curved.

Thorax long-oval, the prothorax distinctly visible from above, the mesonotum with two distinct furrows (rarely indistinct or subobsolete), the scutellum convex or slightly elevated posteriorly, rounded and unarmed at apex, distinctly separated from the mesonotum by a furrow and with two oblique foveæ in the furrow; metathorax as long as wide.

Front wings rather long, veinless, except sometimes the submarginal vein, which is however always pale and never knobbed at tip; usually it is only visible as a hyaline streak.

Abdomen oval, ovate, or oblong-oval, usually as long as the head and thorax united; the first segment is longer than wide, rugose or striated, the second, very large, occupying two-thirds of the surface, the following segments all short.

Legs rather long, the femora strongly clavate.

TABLE OF SPECIES.

FEMALES.

Mesonotum without furrows..... 2

Mesonotum with distinct furrows.

Coxæ black.

Legs and antennæ, except club, pale brownish or honey yellow.

Pedice! as long as the first funicular joint, the second funicular joint shorter than the first..... I. NIGRICLAVUS Ashm.

Pedice! shorter than first funicular joint.

Pleural piece beneath the anterior wing smooth, not striated.

I. FALLIPES Say.

Pleural piece beneath the anterior wing striated.... I. CANADENSIS Prov.

2. Legs and antennæ, except the club, bright yellow.

Abdomen nearly twice as long as the head and thorax united.

I. LONGIVENTRIS Ashm.

MALES.

Flagellum brownish-yellow or pale 2
 Flagellum brown.

Pedice! and second funicular joint equal, the first shorter.

Pleural piece beneath the anterior wing smooth, not striated; terminal club joint only $\frac{1}{2}$ longer than the penultimate.....I. NIGRICLAVUS Ashm.

2. Pedicel a little shorter than the second funicular joint.

Pleural piece beneath the anterior wing smooth, not striated; terminal club joint twice as long as the penultimate; first funicular joint twice as long as thick.....P. PALLIPES Say.

Pleural piece beneath the anterior wing striated; terminal club joint not twice as long as the penultimate; first funicular joint as wide as long.

P. CANADENSIS Prov.

Isocybus nigriclavus Ashm.

Bull. No. 1, Col. Biol. Assoc., p. 10.

♀. Length, 3.4 to 4^{mm}. Black, closely, finely punctate, the face rugulose. Head subquadrate, the occiput concave. Antennæ 10-jointed, brownish-yellow, the 6 terminal joints, constituting the club, black; the pedicel is more than twice as long as thick, the two following funicular joints a little shorter, cylindric, the second obliquely truncate at tip, a little shorter than the first; the joints of the club a little stouter and a little longer than thick, the last being the longest and less than twice as long as thick; parapsidal grooves distinct, converging but not quite meeting posteriorly. Scutellum convex, sparsely covered with a fuscous pubescence, and separated from the mesonotum by a transverse furrow at base. The mesopleura alone smooth and shining, with a large, deep fovea on the disk. Metapleura and metathorax rather densely pubescent, the former divided by a longitudinal grooved line or impression. Legs brownish-yellow; all coxæ black. Abdomen a little longer than the head and thorax together, polished, the petiole roughened, pubescent, and about one-third longer than wide. Wings dusky hyaline, pubescent.

The ♂ differs in having the second funicular joint distinctly longer than the first, the club being paler, with the joints about twice as long as thick.

HABITAT.—Greeley, Colo.

Types in Coll. Ashmead.

Described from several specimens.

Isocybus pallipes Say.

(Pl. XIII, Fig. 5, F.)

Platyaster pallipes Say, Lec. Ed. Say., Vol. 1, p. 383; Ashm. Can. Ent., XIX, p. 132; Cr. Syn. Hym., p. 250.

♂ ♀. Length, 3.5^{mm}. Black, very finely, closely punctate; legs honey-yellow, the coxæ black, pubescent; thorax long, the mesonotum with 2 distinct furrows; mesopleura polished, not striated posteriorly; meta-

thorax with a grooved central ridge, the pleura pubescent. Antennæ 10-jointed; in the ♂ honey-yellow, with a 6-jointed cylindrical club, the flagellum one and two-thirds the length of the scape, the pedicel a little more than half the length of the first funicular joint, the second funicular joint cyathiform, longer than the first; club joints submoniliform, longer than thick; in the ♀ black, the pedicel nearly as long as the first funicular joint, the first, one-third longer than the second, the second cylindric, the flagellar joints a little longer than thick, the last conical, longer than the preceding. Tegulæ rufo-piceous. Wings hyaline. Abdomen polished, about as long as the head and thorax united, much depressed, widest toward the apex and obtusely rounded, narrowed toward the base; petiole longer than thick, finely rugose, with a V-shaped carinated space above; second segment elongate, with 2 finely shagreened foveæ at base.

HABITAT.—Indiana, Canada, Western States, and Texas.
Specimens in National Museum and Coll. Ashmead.

***Isocybus canadensis* Prov.**

Platygaster canadensis Prov., Add., p. 181.

Monocrita canadensis Ashm., Can. Ent., xix, p. 126; Cr. Syn. Hym., p. 250.

♀. Length, 3^{mm}. Black, minutely, closely, rugosely punctate; antennæ and legs, except coxæ, brownish-yellow. The pedicel and second funicular joint are about equal, two-thirds the length of the first funicular joint, the second funicular joint being obliquely truncate at tip; club 6-jointed, rather stout, the first two joints not longer than thick, the three following a little longer than thick, the last a little longer than the penultimate. Thorax trilobed, minutely, rugosely punctate, the middle lobe smoother anteriorly, the lobes posteriorly and the high convex scutellum covered with a sparse fuscous pubescence. Mesopleura deeply impressed or foveated at the middle, smooth, shining, except the piece beneath the anterior wing, which is distinctly striated posteriorly. Wings subfuscous. Abdomen oblong-oval, narrowed at base, the petiole fluted, opaque, pubescent; body of abdomen smooth, polished, the second segment at base with two foveolæ, pubescent both above and beneath.

In the ♂ the antennæ are usually wholly yellow, the second funicular joint being longer and thicker than the pedicel, the first small, subtriangular, not longer than thick, the club joints about twice as long as thick, the last not quite twice as long as the penultimate.

HABITAT.—Ottawa, Canada.

Types, ♂ and ♀, in Coll. Ashmead.

Provancher described this species from the male sex alone, a type specimen of which was kindly sent me by Mr. Harrington.

The fuscous streaks in the wings, resembling nervures, misled me into describing it as a species of *Monocrita* before I had seen the type.

Isocybus longiventris Ashm.

Can. Ent., Vol. XIX, p. 130; Cress. Syn. Hym., p. 249.

♀. Length, 1^{mm}. Polished black, impunctured; head large, quadrate, convex before, the lateral ocelli far away from the eye margin; antennæ, except the club and the legs bright yellow; club brown, 5-jointed. Thorax twice as long as the head is long antero-posteriorly, without furrows; scutellum convex, the metathorax pubescent. Abdomen long, acuminate, almost twice as long as the head and thorax together. Wings hyaline.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Described from a single specimen. As I have already indicated in my original description, this insect is not a genuine *Isocybus*, and is placed here only provisionally or until more specimens are taken and the species can be properly studied. In the shape of the abdomen it recalls *Polymecus*, but the quadrate head and the position of the ocelli will exclude it from that genus.

Subfamily VII.—HELORINÆ.

Head transverse, the vertex broad. Ocelli 3, in a triangle. Eyes large, oblong-oval. Mandibles depressed, the apices acute, the exterior margin rounded, the interior bidentate. Maxillary palpi 6-jointed. Labial palpi 3-jointed. Antennæ porrect, 15-jointed, inserted on the middle of the face. Pronotum distinctly visible from above, the sides impressed, striated, and anteriorly produced into a slight neck; mesonotum with two furrows; scutellum small, semicircular, subconvex, transversely impressed across the base; metathorax short, obtusely rounded posteriorly. Front wings rather broad at tips, with a large, oblong, stigmated marginal vein, two basal cells, a triangular closed marginal cell and closed discoidal cells; the basal vein does not attain the submarginal, but is abruptly bent backward, forming with the median vein a triangular cell, and with the submedian vein a subquadrate discoidal cell; hind wings also broad, with a distinct submarginal vein that curves obliquely backward to the hind margin before attaining one-third the length of the wing.

Abdomen petiolated, obconic; the petiole very long, swollen toward base; the second segment very large, the following short. Legs moderate, the posterior tarsi lengthened a little longer than their tibiæ; tibial spurs 1, 2, 2, the claws pectinate.

This subfamily is at once distinguished by the venation, the basal nervure being abruptly bent, intersecting with the base of the recurrent nervure and forming a triangular cell; the large conical-shaped petiole, and the pectinate claws.

Only one genus is known, *Helorus* Latreille, although Abbé Provancher has described in his "Additions à la Faune Hyménoptérologique

de la Province de Québec," page 154, a genus, *Ropronia*, with one species, *pediculata*, which he at first placed in the family *Braconidæ*, but which subsequently in the same work, page 406, he removes to the *Helorinæ*. The genus is unknown to me in nature, but from his description and figure of the anterior wing, I believe it to be a Braconid, and it is in consequence not included here.

HELORUS Latreille.

Hist. Nat., XIII, p. 230 (1802).

Syn. Copelus Prov., Faune Ent. Can., II, p. 540 (1883).

(Type *H. anomalipes* Panz.)

This genus is sufficiently described in the characters given for distinguishing the group. It is parasitic in the cocoons of *Chrysopa*, a Neuropterous insect, and, so far, only a single species has been detected in our fauna.

Helorus paradoxus Prov.

(Pl. XIII, Fig. 5, ♀.)

Copelus paradoxus Prov., Nat. Can., XII, p. 207, ♀.

Helorus paradoxus Prov., Faun. Ent. Can., II, p. 540; Cress., Syn. Hym., p. 251.

♀. Length, 4.5^{mm}. Black polished, shining; the head transverse, punctate, the face with a sparse whitish pubescence. Mandibles pale rufous, the tips black. Palpi piceous. Thorax smooth, its dorsum with a few minute punctures; the pronotum strongly impressed and striated at sides; mesopleura rugulose anteriorly, smooth posteriorly with fine punctures toward the base of the middle coxæ, sparsely pubescent; metathorax rugose. Tegulæ pale rufous. Wings hyaline, with piceous-black nervures. Leg pale rufous, the coxæ black, the middle and posterior femora toward base rufo-piceous. Abdomen shining black, polished, the apical segments and the venter with fine punctures, the petiole rugose, with some raised longitudinal lines above.

HABITAT.—Cap Rouge, Canada; and Montana.

Specimens in National Museum, Coll. American Entomological Society, and Coll. Ashmead.

This species comes nearest to the European *H. anomalipes* Panz., but it is slenderer, the scutellum smoother, the petiole rougher, and the legs paler than in that species.

Subfamily VIII—PROCTOTRYPINÆ.

Head transverse or quadrate. Ocelli 3, in a triangle. Mandibles edentate, acute at apex. Maxillary palpi 3- or 4-jointed; labial palpi very short, 3-jointed. Antennæ porrect, 13-jointed in both sexes, with a ring-joint. Pronotum distinct, narrowed before; mesonotum elongate, seldom with furrows; scutellum convex, foveated at base; metathorax

usually longer than wide, rounded posteriorly or subtruncate and produced beyond the insertion of coxæ. Front wings with a triangular or semicircular stigmated marginal vein situated much beyond the middle of the wing, a very short, sometimes almost obsolete, marginal cell, and a closed costal cell; and often with traces of discoidal nervures; hind wings broad, veinless. Abdomen petiolated or subpetiolated, conic-ovate, the second segment very large; in the male terminating in two prongs; in the female prolonged into a long, tubular case, inclosing the ovipositor. Legs rather long, the femora clavate, tibial spurs 1, 2, 2, well developed, the tarsi long, 5-jointed, claws simple.

This group, from which the family derives its name, was first described by Latreille in 1796. It is at once distinguished by the edentate mandibles and the shape of the abdomen; in the female the abdomen being prolonged into a long, tubular case, inclosing the ovipositor, while in the male it terminates in two prongs.

The *Proctotrypina* attack apparently only Dipterous and Coleopterous larvæ living in fungi.

The only instance of the rearing of a species in America is by Prof. Comstock, who reared *Proctotrypes obsoletus* Say from the Coleopteron *Stelidota strigosa*. In Europe, the habits of about a dozen species are known, all bred from Coleopterous and Dipterous larvæ living in fungi.

The genera are not numerous, and may be recognized by the aid of the following synoptical table:

TABLE OF GENERA.

FEMALES.

Abdomen terminating in a stylus.	
Wingless.....	2
Winged; maxillary palpi 4-jointed, long, the last joint linear.	
Parapsidal furrows distinct.....	DISOGMUS Förster.
Parapsidal furrows wanting.....	PROCTOTRYPES Latr.
2. Maxillary palpi 3-jointed, short, the last joint subclavate.	
Metathorax smooth.....	CODRUS Jurine.

MALES.

Abdomen terminating in two prongs; winged.	
Maxillary palpi 4-jointed, long, the last joint linear.	
Parapsidal furrows distinct.....	DISOGMUS Förster.
Parapsidal furrows wanting.....	PROCTOTRYPES Latr.
Maxillary palpi 3-jointed, short, the last joint subclavate.	
Metathorax smooth.....	CODRUS Jurine.

DISOGMUS Förster.

Hym. Stud., II, p. 99 (1856).

(Type *D. areolator* Hal.)

(Pl. XIII, Fig. 6, ♀.)

Head transverse or subquadrate.

Antennæ 13-jointed, long, the joints cylindrical, pubescent, or pilose, some of the joints in the male sometimes dentate.

Mandibles conical.

Maxillary palpi 4-jointed, long, the third joint the longest, the second dilated.

Thorax long, the prothorax rounded before, the mesonotum with two deep furrows, the metathorax areolated.

Front wings with an oblong stigma, the marginal cell rather large.

Abdomen much as in *Proctotrypes*, the cauda usually shorter and more slender.

Legs as in *Proctotrypes*, except that the tibial spurs are smaller.

Distinguished from *Proctotrypes* by the distinct mesonotal furrows, the dilated second joint of the maxillary palpi, and the shape of the stigma.

The genus is unknown, as yet, out of the European fauna.

PROCTOTRYPES Latr.

Préc., p. 108 (1796); Förster, Hym. Stud., II, p. 99; = f *Serphus* Schrank, Schrift. d. Berl. Naturf. Fr., I (1780).

(Type *P. gravidator* Linn.)

Head transverse or quadrate, the occiput margined; ocelli 3, prominent, in a triangle, rather close together; eyes ovate or long-oval.

Antennæ inserted on the front between the eyes, 13-jointed with a ring-joint; the scape is short, oval; the pedicel very minute, annular, more or less hidden within the scape and only visible as a ring-joint, hence the genus has been described as having but 12-jointed antennæ; the flagellar joints vary from long cylindrical joints to short, or moniliform joints, and sometimes in the males some of the joints are dentate.

* Mandibles acute at tips, edentate.

Maxillary palpi long, 4-jointed, the last joint linear; labial palpi 3-jointed, the last joint fusiform.

Thorax elongate, the prothorax always visible, depressed above and produced into a neck anteriorly; mesonotum long, highly convex, without furrows, scutellum convex, foveolated at base; metathorax longer than high, sloping or obtusely rounded posteriorly and produced beyond the insertion of the coxæ; spiracles oval or linear.

Front wings with a triangular stigma at about two-thirds the length of the wing with a distinct but very short marginal cell, its length rarely more than half the length of the stigma; costal cell closed; all other cells and nervures entirely, or subobsoletely, obliterated; if present indicated only by fuscous streaks.

Abdomen petiolated, ovate, slightly compressed, the petiole short, the second segment very large occupying most of its surface, in the ♀ terminating in a long cauda; in ♂ ending in two prongs or spines.

Legs long, slender, the femora slightly swollen; tibial spurs 1, 2, 2; tarsi long, slender; claws long, curved, simple.

Our species in this genus are numerous, but may be readily determined by the aid of the following table:

TABLE OF SPECIES.

Head quadrate.....	6
Head transverse.	
Head and thorax black.....	2
Head and thorax pale or rufous, the metathorax sometimes black, wings sub-fuscous, the venation distinct.	
Metathorax coarsely rugose, with longitudinal raised lines, but without a distinct central longitudinal carina; cauda as long as the abdomen.	
<i>P. CAUDATUS</i> Say.	
Metathorax coarsely rugose, not longitudinally striated, but with a distinct central longitudinal carina; cauda half the length of abdomen.	
<i>P. PALLIDUS</i> Say.	
2. Abdomen black.....	3
Abdomen rufous or honey yellow, the apex or petiole alone black.	
Metathorax rugose without a distinct central longitudinal carina.	
Rugosities longitudinal ♂	<i>P. CAUDATUS</i> Say.
Rugosities not longitudinal ♂	<i>P. RUFIGASTER</i> Prov.
Metathorax rugose, with a distinct longitudinal carina.	
All coxæ black.	
Petiole not as long as thick.	
Four terminal abdominal segments black ♂	<i>P. TERMINALIS</i> , sp. nov.
Three terminal abdominal segments black ♂	<i>P. LINELLI</i> , sp. nov.
All coxæ pale.	
Petiole twice as long as thick.	
The sixth abdominal segment dusky.....	<i>P. MELLIVENTRIS</i> Ashm.
Petiole not as long as thick.	
Four or five terminal abdominal segments black.....	(<i>P. TERMINALIS</i> .)
3. The discoidal nervures more or less distinct by fuscous streaks.	
Coxæ black or black basally.	
Metathorax coarsely rugose with a central carina; antennæ with joints 1 to 5 dentate, ♂	<i>P. CALIFORNICUS</i> Holmgr.
Metathorax coarsely rugose, but without a central carina; antennæ simple, ♂	<i>P. OBLIQUUS</i> , sp. nov.
The discoidal nervures entirely wanting.	
Marginal cell always short.....	4
Marginal cell large, as long as the stigma.	
Legs, including coxæ, pale yellow, the inner posterior tibial spur nearly as long as the basal joint of the tarsi, ♂ ♀	<i>P. FLAVIPES</i> Prov.
4. Cauda short, not or scarcely one-third the length of abdomen.....	5
Cauda as long as abdomen.	
Legs, including coxæ, yellow, clypeus and mandibles light rufous.	
<i>P. CLYPEATUS</i> , sp. nov.	
5. Metanotum with 3 carinæ, inclosing 2 large smooth areas above; apex and sides rugose.	
Coxæ black or dusky above.	
Antennæ brown, not extending to apex of thorax, basal two or three yellow.	
<i>P. ABRUPTA</i> Say.	
Coxæ pale.	
Middle carina of metathorax ending at the superior edge of the rounded posterior face.	

Antennæ honey yellow, slightly dusky at apex and reaching the base of the abdomen; second flagellar joint about two-thirds the length of the first, about $2\frac{1}{2}$ times as long as thick, the four following joints equal, as long as the second; cauda short. P. OBSOLETUS Say.

Middle keel extending to the base of the petiole.

Second flagellar joint half the length of the first, $2\frac{1}{2}$ times as long as thick, the following joints, except the last subequal; cauda short.

P. BELFRAGEI, sp. nov.

Metanotum on each side of the median keel rugose.

Middle keel ending at the superior edge of the posterior face.

Second flagellar joint thrice as long as thick, two-thirds the length of first, following joints except the last gradually shortening; cauda short.

P. TEXANUS sp. nov.

Middle keel extending to the base of the petiole.

Second flagellar joint 4 times as long as thick; abdomen ending in two spines, ♂ P. CAROLINENSIS, sp. nov.

6. Head with a frontal carina between the antennæ.

Metathorax not twice as long as high 7

Metathorax twice as long as high.

Head a little longer than wide.

Antennæ and legs rufous, the coxæ black basally.

Antennæ longer than the head and thorax, the first flagellar joint one-third longer than the second, the others at least thrice as long as thick, ♀ P. LONGICEPS, sp. nov.

7. Antennæ and legs, unless otherwise mentioned, rufous or reddish yellow, coxæ more or less dusky basally.

Head a little larger than wide; antennæ brown.

First flagellar joint not longer than the second, shorter than the scape, the others about twice as long as thick, the last twice as long as the penultimate, ♀ P. CANADENSIS, sp. nov.

Head not longer than wide.

First flagellar joint, not or scarcely longer than the second, the others three times as long as thick, ♀. (Coxæ sometimes wholly pale.)

P. SIMULANS, sp. nov.

First flagellar joint distinctly longer than the second.

Flagellar joints 2 to 6 at least thrice as long as thick, ♀.

P. MEDIUS, sp. nov.

Flagellar joints 3 to 10 only a little longer than thick, ♀.

P. QUADRICEPS, sp. nov.

All coxæ black, the femora piceous.

Antennæ slightly thickened towards apex, dusky, the first flagellar joint one-third longer than the second, joints 2 to 10 scarcely longer than thick, ♀ P. FEMORATUS, sp. nov.

Proctotrypes caudatus Say.

(Pl. XIII, Fig. 7, ♀.)

Lec. Ed. Say's Works, I, p. 21; Ashm., Ent. Am., III, p. 98; Cress., Syn. Hym., p. 248.

P. crenulatus Patton, Can. Ent., XI, p. 64 (1879); Ashm. loc. cit., p. 99; Cr. loc. cit. (supra), p. 248.

♂ ♀. Length, 7 to 10^{mm}. Ovipositor as long as or a little longer than the abdomen. Reddish testaceous; metathorax black, upper part of mesopleura and the sutures often black; head and thorax smooth, shining; collar a little wrinkled or grooved at sides; metathorax elongated, rounded behind, longitudinally rugulose and reticulated with coarse

punctures; a row of crenate punctures along the hind margin of the mesopleura. Antennæ 13-jointed, black, the basal joint reddish, robust, partially inclosing the small second joint. Wings subfuscous, the nervures fuscous, the marginal cell very short, about one-fourth the length of the stigma, the internal venation distinct as fuscous streaks. Abdomen not as long as the thorax, the petiole very short, grooved, black; the second segment at base with a median furrow, and three grooves on either side; terebra fully as long as the abdomen, a little curved, longitudinally striated along the sides.

In the ♂ the head and thorax are most frequently black, although sometimes more or less piceous or reddish, the coxæ black or dusky, the tarsi most frequently fuscous or at least tinged, the abdomen dusky at apex and ending in two short prongs; otherwise as in the ♀.

HABITAT.—United States generally.

Specimens in National Museum, Royal Berlin Museum, Coll. American Entomological Society, and Coll. Ashmead.

A common species, somewhat variable in size and color. I have seen Patton's type of *P. crenulatus* in Coll. American Entomological Society, and there is no doubt of its being a synonym of this species.

Dr. Clarence M. Weed has sent me quite a large series collected in Ohio, and I have seen specimens from various parts of the country.

Proctotrypes pallidus Say.

Lec. Ed. Say's Works, I, p. 382; *idem.*, II, p. 725; Ashm. Ent. Am., III, p. 99; Cress. Syn. Hym., p. 248.

♂ ♀. Length, 6 to 8^{mm}. Reddish-testaceous, closely resembling *P. caudatus*, but with the metathorax more finely rugose, with a median carina, the sculpture not longitudinal, the antennæ wholly testaceous or brown, the second abdominal segment with fine striæ at extreme base.

In the ♂ only the meso- and metapleura are blackish, the coxæ pale, the tarsi not dusky, apex of abdomen very slightly dusky, often concolorous with the rest of the abdomen, while the prongs are shorter than in *caudatus*.

HABITAT.—United States.

Specimens in Coll. American Entomological Society, National Museum, and Coll. Ashmead.

Proctotrypes rufigaster Prov.

Nat. Can., XII, p. 263; Faun. Ent. Can., p. 561, ♂ ♀; Ashm. Ent. Am., III, p. 99; Cress. Syn. Hym., p. 248.

♂. Length, 5^{mm}. Head and thorax black; legs reddish-yellow, the tarsi slightly dusky; abdomen reddish-yellow, the petiole, extreme apex of second and following segments black. Antennæ long, cylindrical, black, the basal joint rufous beneath. Thorax smooth; collar at sides, mesopleura beneath the tegulæ and anteriorly and posteriorly,

striated; metathorax coarsely rugose, without a median carina. Wings subhyaline, as in *P. caudatus*. Petiole short, fluted, rugose above.

HABITAT.—Ottawa, Canada.

Types in Coll. Provancher, Ashmead, and Harrington.

***Proctotrypes terminalis*, sp. nov.**

♂. Length, 5.5 to 6.5^{mm}. Head, antennæ, and thorax entirely black; legs rufous, the coxæ black; second abdominal segment, except the apex, red. Antennæ extending to middle of abdomen, slender, cylindrical, the flagellar joints all long, pubescent. Prothorax at sides anteriorly, mesopleura beneath the tegulæ anteriorly and at posterior margin striated or wrinkled; metathorax rugose, with a slight median carina. Wings as in *P. caudatus* Say. Petiole very short, fluted. Hind tibial spur less than one-third the length of the basal tarsal joint.

HABITAT.—Washington, D. C., and Columbus, Ohio.

Types in National Museum and Coll. Ashmead.

My specimens were presented to me by Dr. C. M. Weed.

***Proctotrypes Linelli*, sp. nov.**

♂. Length, 4^{mm}. Closely allied to *P. terminalis*, agreeing with it in color and sculpture, except that only the 3 terminal abdominal joints are black, the metathorax more coarsely rugose, with the median carina quite distinct and extending from base to apex, while the hind tarsi are slightly dusky, the tibial spur being one-third the length of the basal tarsal joint. The wings are hyaline, the marginal cell nearly obsolete, not as long as the width of the radius, the latter prolonged into the disk of the wing with a small fuscous spot at its origin.

HABITAT.—Long Island.

Type in Coll. Ashmead.

Described from a single specimen collected by Mr. Martin Linell.

***Proctotrypes melliventris* Ashm.**

Ent. Am., III, p. 99 ♂; Cress. Syn. Hym., p. 248.

♂. Length, 4.1^{mm}. Head and thorax black, polished, the metathorax rugose, with a longitudinal median carina; legs and abdomen reddish-yellow; the petiole and the apex of abdomen black; petiole a little more than twice as long as thick, with longitudinal furrows; tip of abdomen ending in two prongs. Antennæ 13-jointed (with a ring-joint), black, reaching to the base of the second abdominal segment, cylindrical, pubescent, very slightly thinner at apex; the first and last flagellar joints the longest, unequal, the first a little more than 4 times as long as thick, the last 6 times as long as thick, the intermediate joints very slightly decreasing in length. Wings hyaline with a faint fuscous tinge, the venation brown-black, the radial cell very short, less than $\frac{1}{2}$ the length of the stigma, with a small dusky streak below the base of the radius; disk of wings with traces of the cubitus and anal ner-

vures, otherwise veinless. Hind tarsi as long as their tibiæ, the tibial spur $\frac{1}{2}$ the length of the basal tarsal joint.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***Proctotrypes californicus* Holmg.**

Kongl. sv. Freg. Eug. Resa Ins., p. 434; Cr. Syn. Hym., p. 248.

♂. Length, 4 to 4.5^{mm}. Polished black; the mandibles, antennæ beneath and legs, except coxæ, rufous. Metathorax finely rugose,* with a median carina. Joints 1 to 5 of flagellum dentate beneath. Wings subhyaline, the discoidal nervures distinctly visible as fuscous streaks, marginal cell one-third the length of the stigmal. Abdomen black, polished, not longer than the thorax, the petiole very short, rugose, striated at sides and beneath, the second segment with some striæ at extreme base, terminal segment ending in two short prongs.

HABITAT.—California, Canada, and Virginia.

Specimens, agreeing in all particulars with Holmgren's description, are in my collection. The species is easily recognized by the dentated flagellar joints, being the only species in our fauna thus distinguished.

***Proctotrypes obliquus*, sp. nov.**

♂. Length, 4.5^{mm}. Polished black. Head very broad, more than thrice as wide as thick antero-posteriorly. Eyes large, ovate. Mandibles piceous, black. Palpi very long, pale brownish. Antennæ 13-jointed, very long, filiform, pubescent, the flagellar joints nearly of an equal length, about four times as long as thick. Metathorax gradually sloping off posteriorly and produced into a point far beyond the insertion of the hind coxæ, coarsely reticulately rugose; at the base are two large foveæ which are connected by a sulcus or a grooved line with the spiracular foveæ. Tegulæ brown. Wings subhyaline, the stigma and radius brown-black; the marginal cell is a little longer than half the length of the stigma. Legs pale brownish-yellow, the hind coxæ black, the others black only at base; the tibial spurs are long, the inner spur of hind tibiæ being more than half the length of the basal tarsal joint, all tarsi longer than tibiæ. Abdomen subcompressed, black, shining, and composed of but 3 visible segments, the apex when viewed from the side being obliquely truncated, the usual two projecting spines wanting.

HABITAT.—Texas.

Type in National Museum.

Described from a single specimen in Belfrage collection.

***Proctotrypes flavipes* Prov.**

Nat. Can., XII, p. 264; Faun. Ent. Can., II, p. 562 ♀.

Megaspilus lucens Prov., Faun. Ent. Can., II, p. 808 ♀.

Proctotrypes flavipes Prov., Add. et Corr., pp. 462 and 471.

♀. Length, 3.5 to 4^{mm}. Polished black; mandibles, tegulæ, and legs, yellow. Metathorax finely rugose, with two large smooth areas at base

above. Wings hyaline, the nervures and stigma yellowish, the discoidal nervures entirely wanting; costal cell very wide; stigma semicircular, the marginal cell as long as the stigma. Inner spur of posterior tibiæ fully two-thirds the length of the basal tarsal joint. Abdomen black, polished, as long as the thorax, the ovipositor long, nearly half the length of the abdomen. Antennæ rather short, brownish-yellow, paler beneath and toward base, filiform, the first and second funicular joints equal, the following shorter.

HABITAT.—Ottawa, Canada.

Specimens are in my collection, received from Mr. W. H. Harrington.

The species is quite distinct from all others in our fauna in the size of the marginal cell and the long tibial spur of posterior legs. It seems to agree quite closely with the European *P. calcar* Haliday.

Proctotrypes clypeatus, sp. nov.

♀. Length, 3.5^{mm}, to the tip of ovipositor 4.5^{mm}. Polished black; clypeus and mandibles pale rufous; legs, including coxæ, yellowish; ovipositor longer than the abdomen, the basal two-thirds reddish yellow. Antennæ pale brownish-yellow, not longer than the thorax, the first flagellar joint a little longer than the second, joints 2 and 3 about equal, fourth slightly shorter, the following to the last about twice as long as thick, the last one-half longer than the penultimate, ovate. Metathorax rugose, with two smooth areas at base above. Wings hyaline, the discoidal nervures wanting; stigma large, brown-black; marginal cell less than one-half the length of the stigma. Tibial spurs of posterior legs about one-half the length of the basal tarsal joint. Abdomen polished black, about as long as the thorax, the petiole scarcely apparent, second segment at extreme base with a long foveola on either side.

HABITAT.—Ithaca, N. Y.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. F. H. Chittenden, who informs me he reared it October 15, 1884, from a large yellow, rather woody, fast-growing tree fungus, from which Melandryid, Mycetophagid, Staphylinid and Scaphidiid beetles were obtained.

Proctotrypes abruptus Say.

Bost. Jour., I, p. 278 ♀; Lec. Ed. Say's Works, II, 725; Ashm. Ent. Am., III, p. 98; Cress. Syn. Hym., p. 248.

♀. Length, 2.5 to 3^{mm}. Polished black; mandibles black or piceous; legs reddish yellow, the coxæ sometimes black or black toward base; ovipositor about $\frac{1}{4}$ the length of the abdomen or very slightly longer than the basal joint of hind tarsi. Antennæ brown, not longer than the thorax, slightly thickened toward base, the basal joint or sometimes the 3 or 4 basal joints, yellow; first flagellar joint about one-half longer than the second, or the second joint is two-thirds the length of

the first, the following joints to the last very gradually shortening, the penultimate being but slightly longer than thick, the last being twice as long as the penultimate, fusiform. Metathorax rugose, with 3 carinae, inclosing two large smooth areas at base. Abdomen as long as the thorax, black, shining, the ovipositor about $\frac{1}{2}$ its length. Wings hyaline, without discoidal nervures, the stigma large, the marginal cell $\frac{1}{2}$ its length, not petiolate at base.

HABITAT.—Jacksonville, Fla.; Virginia, and Indiana.

Specimens are in the National Museum, Coll. American Entomological Society, and Coll. Ashmead.

Proctotrypes obsoletus Say.

Bost. Jour., I, p. 277, ♀; Lec. Ed. Say, II, p. 725; Ashm. Ent. Am., III, p. 98; Cress. Syn. Hym., p. 248.

♀. Length, 4^{mm}. Polished black; antennae brownish-yellow; mandibles yellowish; legs reddish-yellow; wings hyaline. Antennae 13-jointed, very slightly thickened towards tips, second flagellar joint two-thirds the length of the first, the four following equal, about as long as the second, $2\frac{1}{2}$ times as long as thick, the terminal joint fusiform, almost as long as the two preceding joints together, or fully as long as the first. Metathorax rugose, the middle carina extending to the posterior face. Abdomen longer than the head and thorax united, emarginate at base, the petiole extremely short, the cauda very slightly longer than the basal joint of hind tarsi.

In the male the antennae are filiform, pale brownish, the first flagellar joint as long as the scape, the joints very slightly increasing in length from the second, broken off from the sixth.

HABITAT.—District of Columbia and Indiana.

Specimens in National Museum and Coll. Ashmead.

A single specimen of what I believe to be this species was reared by Prof. Comstock, December 9, 1879, from *Stelidota strigosa*.

Proctotrypes Belfragel, sp. nov.

♀. Length, 5^{mm}. Polished black, with a sparse fuscous down. Head transverse, thrice as wide as thick antero-posteriorly; palpi pale; mandibles rufo-piceous. Antennae 13-jointed, pale brown, darker towards tips, extending to tegulae, cylindrical, the scape oval, the pedicel annular, the first and the last flagellar joints equal, the joints after the first very gradually shortening, the three preceding the last not more than $1\frac{1}{2}$ times longer than thick. Metathorax at sides coarsely rugose, the disk smooth, shining, with 3 carinae, the middle of which extends to the apex, the lateral abbreviated. Tegulae and legs reddish yellow, the posterior coxae behind black; tibial spurs short. Wings hyaline, the venation, except costal nervure, piceous-black; the marginal cell is very short, one-third the length of the stigma; no traces of nervures in

the discoidal region. Abdomen black, polished, the petiole very short, the base of second segment with some raised lines; cauda short, impunctured, curved, very slightly longer than the basal joint of the hind tarsi.

HABITAT.—Texas.

Type in Coll. National Museum.

Described from a single specimen in Belfrage collection.

Proctotrypes texanus, sp. nov.

♀. Length, 3^{mm}. Polished black; mandibles, palpi, and legs, including coxæ, yellow; antennæ longer than the thorax, slender, filiform, brownish-yellow, pubescent; first funicle joint slightly longer than the second, the following joints to the last very gradually shortening, the penultimate being about 4 times as long as thick, the last about one-half longer than the penultimate. Metathorax finely rugose, with a median carina extending to apex. Inner spur of posterior tibiæ about one-half the length of the basal joint of tarsi. Wings hyaline, the stigma brown, the marginal cell about one-third the length of the stigma, petiolated at base. Abdomen a little shorter than the thorax, black, shining, the petiole distinct, fully as long as thick, fluted, second segment at extreme base striated; prongs very short.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen.

Proctotrypes carolinensis, sp. nov.

♂. Length, 5^{mm}. Polished black. Head twice as wide as thick antero-posteriorly with a frontal carina extending from the front ocellus to between the base of the antennæ. Mandibles rufous, the tips black. Palpi long, yellowish. Antennæ 13-jointed, filiform, brown-black, the scape yellow; the flagellar joints very gradually shortening to the last, the last equal with the second, the first joint is the longest and a little more than 4 times as long as thick. Metathorax rugose, rounded off posteriorly with a single central longitudinal carina extending quite to its apex. Tegulæ yellowish. Wings hyaline, the venation brown-black, the marginal cell short, less than one-half the length of the stigma. Legs yellow; the coxæ behind at base dusky; the tibiæ and tarsi are long, about of an equal length; the posterior tibial spurs not quite half the length of the basal tarsal joint. Abdomen black, polished, not longer than the thorax, composed of five segments, petiole distinctly grooved, second segment at base grooved, terminal segment ending in two prongs.

HABITAT.—North Carolina.

Type in National Museum.

Proctotrypes longiceps, sp. nov.

♀. Length, 7^{mm}. Polished black; antennæ yellowish, the apical joints a little dusky, the first flagellar joint the longest, the following to the last slightly shortening, the penultimate being scarcely 3 times as long as thick, the last one-half longer than the preceding; palpi yellowish; legs reddish-yellow, the coxæ slightly dusky basally. Metathorax twice as long as high, finely rugulose, smoother above, with a median carina. Wings hyaline, the discoidal nervures visible as fuscous streaks, the stigma fuscous, the marginal cell one-third the length of the stigma, petiolated. Abdomen black, shining, longer than the head and thorax together, distinctly petiolated, the petiole more than twice as long as thick, finely striated; ovipositor not longer than the basal joint of hind tarsi. The femora are swollen, the tibiæ subclavate, the inner spur of posterior tibiæ scarcely one-third the length of the basal tarsal joint.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

Proctotrypes canadensis, sp. nov.

♀. Length, 3^{mm}. Polished black; antennæ brown, the first flagellar joint not longer than the second, shorter than the scape, the following joints, except the last, about 2½ times as long as thick, the last fully twice as long as the penultimate; legs reddish-yellow, the coxæ dusky basally. Metathorax a little longer than high, rugose, smooth on dorsum toward base, with a median carina. Wings hyaline, without discoidal nervures, the stigma yellowish, the marginal cell less than half the length of the stigma, petiolated. Abdomen black, shining, not longer than the thorax, the petiole scarcely as long as thick, rugose, the second segment at base with numerous striæ; ovipositor very short, two-thirds the length of the basal joint of hind tarsi. The femora are not so much swollen, the tibiæ long and slender, the inner spur of hind tibiæ not more than one-fourth the length of the basal tarsal joint.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen, received from Mr. W. Hague Harrington. Its smaller size, shorter metathorax and ovipositor, relative length of the antennal joints and the shorter tibial spurs, easily separate the species.

Proctotrypes simulana, sp. nov.

♀. Length, 4^{mm}. Polished black, antennæ rufous, the first flagellar joint scarcely longer than the second, but as long as the scape, the following joints after the third about 2½ times as long as thick, the last less than twice as long as the penultimate; legs, including coxæ, reddish-

yellow. Metathorax $1\frac{1}{2}$ times as long as high, rugose, smooth toward base above, with a median carina. Wings hyaline, the discoidal nervures traceable as fuscous streaks, stigma brown, the marginal cell less than half the length of the stigma, petiolated. Abdomen black, polished, about as long as the thorax, petiolated, the petiole not longer than thick, striated, extreme base of second segment striated, ovipositor not longer than the basal joint of hind tarsi.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from a single specimen captured by myself. Since this was written I have received another specimen, taken by Mr. E. A. Schwarz, at Fort Pendleton, W. Va., agreeing in every particular with the above description, except the coxæ are concolorous with the legs.

Proctotrypes medius, sp. nov.

♀. Length, 5.5^{mm}. Polished, black; antennæ brownish-yellow, rather stout, the first flagellar joint the longest, a little longer than the scape and pedicel together, or one-third longer than the second, the joints after the fourth about 3 times as long as thick, the last longer, as long as the second; legs, including coxæ, reddish-yellow, the inner spur of posterior tibiæ fully one-third the length of the basal tarsal joint. Metathorax less than twice as long as high, coarsely rugose, with a median carina and two large, smooth areas toward base. Wings hyaline, the discoidal nervures very faintly traceable, the stigma brown, the marginal cell about one-fourth the length of the stigma. Abdomen black, polished, longer than the thorax, petiolated, the petiole longer than thick, striated; ovipositor as long as the basal joint of hind tarsi, stout.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington. Approaches nearest to *P. longiceps*, only the head is a little wider than long, the metathorax shorter, more coarsely rugose, the petiole shorter, while the tibial spurs are longer.

Proctotrypes quadriceps, sp. nov.

♀. Length, 4^{mm}. Polished black; legs reddish-yellow, the coxæ a little dusky basally; inner spur of hind tibiæ a little less than half the length of the basal tarsal joint; palpi whitish or pale yellowish; metathorax scarcely longer than high, rugose, with a median carina and two large, smooth areas on either side of it, inclosed at sides by delicate lateral carinæ. Antennæ robust, filiform, reddish-brown, scarcely longer than the head and thorax together, the 3 basal joints yellowish, the first flagellar joint scarcely as long as the last or very little longer than the second. Wings hyaline, the discoidal nervures subobsolete,

stigma brown, the marginal cell petiolated, one-third the length of the stigma. Abdomen polished, black, not longer than the head and thorax together, the petiole not as long as wide, striated, second segment with sulci at base; ovipositor not longer than the basal joint of hind tarsi.

HABITAT.—New Jersey.

Type in Coll. Ashmead.

Described from a single specimen.

Proctotrypes femoratus, sp. nov.

♀. Length, 2.1^{mm}. Polished black; legs yellowish, the coxæ black or piceous, the femora swollen, piceous or rufo-piceous; inner spur of hind tibiæ one-third the length of the basal tarsal joint; palpi yellowish; metathorax not longer than high, closely punctulate, the dorsum smooth and polished, with a median carina. Antennæ brown, not longer than the head and thorax together, slightly thickened toward the tips, the scape piceous, pedicel yellow; the first flagellar joint is two-thirds the length of the last joint, or very little longer than the second, the joints after the second scarcely longer than thick. Wings hyaline, the discoidal nervures entirely wanting, the stigma brown-black, the marginal cell petiolated one-third the length of the stigma. Abdomen polished, black, not longer than the head and thorax together; the petiole not as long as thick, rugose, second segment striated above at extreme base; ovipositor scarcely longer than the basal joint of hind tarsi.

HABITAT.—Wyoming.

Type in Coll. Ashmead.

Described from a single specimen obtained through Mr. H. F. Wick-

CODRUS Jurine.

Hym., p. 308 (1807); Thoms. Öfv., 1857, p. 421.

(Type *C. apterogynus*, Hal.)

(Pl. XIII, Fig. 8, ♀.)

Head subquadrate.

Antennæ 13-jointed, in ♀ very slightly thickened toward the tips; in ♂ setaceous, pubescent, the flagellar joints longer.

Mandibles acute at tips, edentate.

Maxillary palpi short, 3-jointed, the last joint subclavate; labial palpi very short, 2-jointed.

Thorax elongate, the prothorax narrowed and rounded before, mesonotum highly convex, without furrows, metathorax a little longer than high, slightly depressed above, smooth and shining.

Front wings with a subtriangular stigma and a very minute marginal cell, without traces of nervures in the discoidal region; the ♀ apterous.

Abdomen much as in *Proctotrypes*, the dorsum subdepressed, and the cauda very short.

Legs as in *Proctotrypes*.

The short 3-jointed maxillary palpi and the subdepressed smooth metathorax distinguish this genus from *Proctotrypes* and *Disogmus*. No species is known from North America.

Subfamily IX.—BELYTINÆ.

Head transverse or subglobose. Ocelli 3, in a triangle, rarely wanting. Eyes most frequently hairy. Mandibles usually short, acute at tips, with a tooth within, rarely falcate and crossing each other at tips. Maxillary palpi 4- or 5-jointed; labial palpi 3-jointed. Antennæ perfect, inserted on a frontal prominence, in males 14-jointed, in females 14- or 15-jointed, filiform setaceous, or subclavate, or more rarely clavate-moniliform, the scape long. Pronotum distinctly visible from above and narrowed into a short neck at the junction with the head; mesonotum usually as broad as long, with deep furrows, rarely entirely without furrows; scutellum convex, deeply foveated at base; metathorax short, usually carinated, rarely spined, posteriorly truncate or emarginate. Front wings with a closed costal cell, a single basal cell, and a radial or marginal cell, the latter either closed or open, with a branch of a vein interstitial with the second abscissa of the radius and extending backwards into the discoidal field of the wing; it is quite rare for the marginal cell to be entirely wanting; hind wings always with a basal cell. Apterous forms rare. Abdomen distinctly petiolated, oblong-oval, ovate, conic-ovate, or pyriform, and composed of from 3 to 8 segments, the second segment always large. Legs rather long and slender, the tibial spurs 1, 2, 2, the tarsi long, slender, 5-jointed, claws simple.

An extensive and but slightly studied group, closely related to the *Diapriinæ* and formerly confused with them. A Belytid may, however, always be distinguished from a Diapriid by having a distinct basal cell in the hind wings, and by the 3-jointed labial palpi; also, except in a few cases, by the venation of the front wings, which have a distinct basal cell and usually a distinct marginal cell.

The exotic genus *Monomachus* Westwood, at present placed with the *Evaniidæ*, should probably be placed in this group; but as the genus is known to me only from the description I can not tell positively without seeing specimens for study.

Nothing is known of the habits of the species composing this group, although Nees von Esenbeck and others believe they undergo their transformations within the larvæ of Diptera that inhabit fungi. From their close structural resemblance to the *Proctotrypinæ* this supposition is probably correct.

Our entomologists should give more attention to the rearing of insects infesting fungi, not only for the purpose of throwing light upon the obscurity that enveils these insects, but upon those of other groups, and it is hoped the near future will bring forth some results from those so situated as to make observations upon fungi-feeding insects.

The following table includes all the genera at present known to me:

TABLE OF GENERA.

FEMALES.

Antennæ 14-jointed.....	7
Antennæ 15-jointed.	
Abdomen with 7 or 8 dorsal segments.....	3
Abdomen with 3 or 4 dorsal segments.	
Marginal vein as long as, or scarcely longer than, the marginal cell.....	2
Marginal vein more than twice as long as the marginal cell.	
MACROHYNNIS Förster.	
2. First funicular joint nearly as long as all the rest together, the intermediate joints transverse-moniliform.....	DIPHORA Förster.
First funicular joint not unusually lengthened.	
Abdomen with 3, seldom with 4 dorsal segments, the second not greatly lengthened, the third long and strongly compressed laterally; marginal vein not shorter than the marginal cell; antennæ filiform, pubescent, the funicular joints all long.....	LEPTORHAPTUS Förster.
Abdomen with 3 segments, the second very much lengthened, almost reaching to tip of abdomen, the third issuing from it like a short stylus; marginal vein usually distinctly shorter than the marginal cell; antennæ filiform, pubescent, the 5 or 6 terminal joints oval, the others long.....	MIOTA Förster.
3. Abdomen with 7 dorsal segments; antennæ clavate-moniliform, the first funicular joint slightly longer than the pedicel, all others to the last moniliform, the last enlarged, oval; first abscissa of radius straight, or at least not very oblique.....	ACROPIESTA Förster.
Abdomen with 8 dorsal segments.	
Eyes bare.....	6
Eyes hairy.	
Middle carina of metathorax not divided.....	4
Middle carina of metathorax divided, or wanting.....	BELYTA Jurine.
4. Postscutellum with a strong thorn or spine.....	OXYLABIS Först.
Postscutellum without a thorn or spine.	
Third dorsal segment of abdomen not, or very little, longer than the fourth....	5
Third dorsal segment of abdomen much longer than the fourth.	
Mandibles short, small; marginal vein as long as marginal cell; antennæ filiform, pubescent, the last flagellar joint more than twice as long as thick.....	CINETUS Jurine.
Mandibles long, falcate; marginal vein shorter than the marginal cell; last funicular joint not more than twice as long as thick.	
XENOTOMA Förster.	
5. Marginal cell closed.	
First abscissa of radius straight from the margin, shorter than the marginal vein; funicular joints only slightly shortened toward the tips of antennæ.....	ZELOTPA Förster.
First abscissa of radius oblique, longer than the marginal vein; funicular joints strongly shortened toward the tips of antennæ, much wider than long.....	PANTOCLIS Förster.
Marginal cell open.	
Stigmal and postmarginal veins much shortened, the stigmal given off at almost a right angle.....	ZYGOTA Förster.

Stigmal and postmarginal veins much shortened, the stigmal given off at a very oblique angle; antennæ clavate, moniliform, the first funicular joint only a little longer than thick and much smaller than the pedicel.

ACLISTA Förster.

Stigmal vein very short, with an uncus, marginal vein as long as the basal nervure, mandibles conical, not rostriform; scape at tip produced into a little spine; palpi 4-jointed.....SYNACRA Förster.

6. Mesonotum with 2 furrows; marginal cell long, open; antennæ clavate-moniliform, the first funicular joint slightly longer than the pedicel.

PSILOMMA Först.

Mesonotum without furrows.....ISMARUS Hal.

7. Ocelli wanting; wingless.....ANOMMATIUM Förster.

Ocelli present.

Marginal cell distinct, closed; antennæ filiform or subclavate.

ANECTATA Förster.

Marginal cell scarcely discernible or wanting; antennæ subclavate-moniliform, pubescent, the first funicular joint smaller than the pedicel.

PANTOLYTA Först.

MALES.

Petiole of abdomen not, or scarcely, longer than the metathorax..... 2

Petiole of abdomen almost twice as long as the metathorax.

Marginal vein twice as long as the marginal cell.....MACROHYNNIS Först.

Marginal vein much larger than the stigmal and about as long as the marginal cell.

Second abdominal segment compressed laterally; petiole smooth above.

Antennæ filiform, the scape as long as the first funicular joint, the latter strongly emarginated at base.....LEPTORHAPTUS Först.

Antennæ filiform, pubescent, the scape not as long as the first funicular joint, the latter slightly emarginated at base.....MIOTA Först.

Second abdominal segment not compressed laterally, the abdomen becoming more flattened behind the segment; the petiole above more or less furrowed; scape longer than the first funicular joint.

CINETUS Jurine.

Marginal vein as long as, or a little longer than, the stigmal, but much shorter than the marginal cell; mandibles falcate.....XENOTOMA Först.

2. Middle carina of metathorax not divided..... 3

Middle carina of metathorax divided or absent.

Marginal vein scarcely longer than the stigmal, marginal cell long, postmarginal vein greatly lengthened; antennæ filiform, all the joints long, cylindrical, the first funicular joint emarginate at base.....BELYTA Jurine

3. Postscutellum with a strong spine.....OXYLABIS Förster.

Postscutellum without a spine.

Eyes not hairy..... 4

Eyes hairy.

Marginal cell closed.

Scape with the apical margin on one side produced into a tooth.

ACROPIESTA Först.

Scape not produced on one side into a tooth.

Marginal vein not or scarcely longer than the first abscissa of radius, the latter oblique.

Last ventral segment very straight and punctured.

Anterior tibiæ normal.....ANECTATA Först.

Anterior tibiæ bent, with a median spined process....ZYGOTA Först.

Last ventral segment somewhat bent, not punctured...PANTOCLIS Först.

Marginal vein at least twice as long as the first abscissa of radius, the latter straight, in a right angle with the costa or only slightly oblique.

ZELOTYPÄ Först.

Marginal cell open, or wanting.

Marginal cell wanting.

Basal vein distinct; antennæ filiform, pubescent, the first flagellar joint twice as long as the pedicel, slightly emarginate at base.

PANTOLYTA Först.

Marginal cell more or less distinctly present.

Marginal cell much lengthened; marginal vein hardly longer than the first abscissa of radius; antennæ filiform pubescent, all the joints lengthened, the first flagellar joint emarginate at base; anterior tibiæ strongly bent, outwardly produced towards one side into a tooth or spine ZYGOTA Först.

Marginal cell not much lengthened; first abscissa of radius very oblique; anterior tibiæ simple; antennæ thick, filiform, densely pubescent, the first flagellar joint not longer than the second, emarginate at base.

ACLISTA Först.

4. Mesonotum with two furrows; marginal cell long, open.

Antennæ stout, filiform, the first flagellar joint longer than the second, the second slightly emarginate at base, the joints after second scarcely twice as long as thick PSILOMMA Först.

Mesonotum without furrows.

Antennæ filiform, the first flagellar joint shorter than the second. . ISMARUS Hal.

MACROHYNNIS Förster.

Hym. Stud., II, p. 131 (1856).

A genus unknown to me, and the type, if still in existence, has never been described. Dr. Förster in speaking of it says:

In the genus *Macrohynniss* we have before us, on account of its peculiar venation, a very striking form which can scarcely be confounded with any other.

The marginal nervure, for instance, is fully twice as long as the rather short marginal cell, and both combined present exactly the appearance of a plow-share of simple construction; while the backward directed branch of the radius, if continued would cross the basal nervure.

All joints in the female antennæ are elongate, cylindrical, and so strongly lengthened as to be readily confounded with those of the male were it not for the excision of the first flagellar joint and the pointed abdomen, which betray its sex. The scape is short in both sexes; in the female at the most as long as the first joint of the flagellum, while in the male it is usually somewhat shorter. The lateral angles of the metanotum are slightly projecting. The abdominal petiole is longer than the metanotum, although not abnormally long, and slightly furrowed above. The second segment of the abdomen which viewed laterally appears to be slightly compressed, together with the remaining segments, have a pear-shaped appearance particularly pronounced in the case of the female, while in the male the tip of the abdomen is curved downward, giving the apex rather a more blunt appearance. The sutures between the segments are very fine and the segments themselves are strongly shortened, so that they are almost transversely linear.

DIPHORA Förster.

Hym. Stud., II, p. 130 (1856).

(Type *D. Westwoodii* Förster.)

This genus is likewise unknown to me. Dr. Förster, *op. cit.*, p. 141, mentions as the type, *Diphora Westwoodii*, but gives no description

and it has not since, to my knowledge, been described. In his remarks he has the following to say respecting the genus:

If we consider, alone, the shape of the antennæ, we have undoubtedly in the genus *Diphora* the most remarkable form in the Belytoidæ. Not only does the scape attain a considerable length, but the first flagellar joint is also as long as the scape, while the other joints, with the exception of the last, are very short, being even broader than long, on account of which the flagellum has a moniliform appearance; we might therefore easily be led to the conclusion that the antennæ had a double flagellum. The mesonotal furrows are deep and distinct. The abdomen is composed of three segments, the petiole is short and stout, the second segment very large, while the third, which is separated from the second by a distinct suture, attains the length of the petiole, and from its apex projects a short point or nipple, as if from a tube. The marginal cell of the wings is completely closed; the marginal vein very short, even shorter than the stigmal branch, which forms a very acute angle. The post-marginal vein extends but a short distance beyond the apex of the marginal cell. The marginal cell is strongly elongated and narrow, the radius of which has a short blurred and but slightly curved stump, which, in its extension, does not cross the basal nervure.

LEPTORHAPTUS Förster.

Hym. Stud., II, p. 131. (1856.)

(Type *L. abbreviatus* Först.)

Head transverse, the occiput slightly impressed at the middle, not or indistinctly margined; ocelli 3, prominent, close together in a triangle; eyes rounded, hairy.

Antennæ inserted on a frontal prominence, long, filiform, cylindrical in both sexes, seldom a little thickened toward tips; in ♀ 15-jointed, the scape very long, slender, reaching far above the ocelli, as long as the first two or three flagellar joints together, the pedicel oval, the first flagellar joint the longest, the following gradually shortening, the last being a little longer than the penultimate; in ♂ 14-jointed, the first flagellar joint nearly, or quite, as long as the scape, strongly excised at base.

Thorax ovate, the mesonotum with two profound furrows, the scutellum convex, broadly foveated across the base, the metathorax longitudinally carinated.

Front wings with the marginal vein reaching the costa at about the middle of the wing, a marginal vein as long as, or a little longer than, the triangular closed marginal cell, the latter with a backward directed vein from the stigmal, and a distinct basal cell.

Abdomen longer than the head and thorax together, composed apparently of but 3 segments, the petiole being unusually long, body of ♀ conic, ovate, of ♂ pear-shaped.

Legs long, slender, pilose, or pubescent, the tibial spurs more strongly developed than in *Miota*.

TABLE OF SPECIES.

FEMALES.

Body of abdomen black, the tip alone rufous.

Antennæ as long as the body, very slender, brownish-yellow, fuscous toward tips, the second flagellar joint about 5 times as long as thick.

L. CONICUS, sp. nov.

Body of abdomen rufous.

Antennæ extend only to the base of the abdomen, rufous, the 7 terminal joints moniliform..... L. RUFUS, sp. nov.

MALES.

Entirely rufous..... L. RUFUS, Ashm.

Entirely black..... L. CONICUS, sp. nov.

Leptorhaptus conicus, sp. nov.

(Plate XIV, Fig. 1, ♀.)

♂ ♀. Length, 3 to 4^{mm}. Black, shining; antennæ, mandibles, palpi, tegulæ and legs brownish-yellow; the antennæ toward tips fuscous; tip of abdomen rufous. Antennæ in ♀ 15-jointed, as long as the body, slender, filiform, the scape very long, the pedicel rounded, the first flagellar joint half the length of the scape, the joints beyond to the last very gradually subequal, the last a little longer than the penultimate, thrice as long as thick. In the ♂ the antennæ are 14-jointed, the scape much shorter, the first flagellar joint is about two-thirds the length of the scape excised at base. Thorax with two furrows, the scutellum with a deep fovea at base, the metathorax carinated and rugose at the sides. Abdomen long, conic-ovate, the petiole thrice as long as thick, fluted. Wings hyaline, the pubescence fuscous, the venation pale brown; the marginal vein is as long as the marginal cell. In the ♂ the venation is darker; the petiole is twice as long as the metathorax or four times as long as thick, slightly narrowed basally and apically, smooth, shining, with a grooved line at sides and a few punctures above; the body of the abdomen is pear-shaped, smooth and shining, with 3 grooved lines at extreme base and pubescent at tip.

HABITAT.—Arlington, Va., and Cedar Point, Md.

Types ♂ ♀ in Coll. Ashmead.

Described from 4 ♀ and 1 ♂.

Leptorhaptus rufus, sp. nov.

♂ ♀. Length, 4 to 4.5^{mm}. The ♂ is entirely rufous; the antennæ, mandibles, palpi, tegulæ and legs pale brownish-yellow, the antennæ toward tips fuscous. First flagellar joint as long as the scape and pedicel together, excised at base, the following joints to the last, long, cylindrical, subequal. Mandibles bifid at tips with a large tooth within. Thorax with two furrows, the scutellum with a large fovea at base which is itself bifoveated at bottom, the metathorax with three keels. Body of abdomen long, pear-shaped, the petiole very long, four times as long as the metathorax or six or more times longer than thick, smooth and

polished, but with grooved lines along the sides; second segment without grooved lines at base. Wings hyaline, the marginal vein a little longer than the marginal cell.

The ♀ has the head, thorax, and petiole black, the rest of the abdomen rufous; the abdomen is conic-ovate, the tip curving upwards; the petiole twice as long as the metathorax, fluted, gibbous towards the base; the antennæ, palpi, tegulæ, and legs brownish-yellow; the first flagellar joint much the longest, twice as long as the second.

HABITAT.—Jacksonville, Fla., and Washington, D. C.

Types ♂ ♀ in Coll. Ashmead.

The ♂ was captured in Florida, the ♀ near Washington.

MIOTA Förster.

Hym. Stud., II, p. 131 (1856).

Head subglobose, the occiput slightly emarginate, delicately margined, ocelli 3, rather close together in a triangle; eyes oval, pubescent.

Antennæ inserted on a frontal prominence, in ♀ long, filiform or sub-filiform, 15-jointed, the scape thicker than the flagellum and a little longer than the first flagellar joint, the second subequal with the first, the joints beyond to the last gradually becoming shorter and shorter, the penultimate joint not longer than thick, the last longer and a little stouter; in ♂ 14-jointed, the scape shorter, not reaching beyond the ocelli, the first flagellar joint emarginate at base, the following long, cylindrical.

Maxillary palpi 5-jointed, labial palpi 3-jointed.

Mandibles acute at tips.

Thorax ovate, the angles of the collar acute, the mesonotum with 2 deep furrows, the scutellum convex, with a deep fovea at base, the metathorax not longer than high, truncate at apex, the truncature margined and connected with a longitudinal carina on the dorsum.

Front wings with venation as in *Leptorhapta*, the marginal vein being rarely longer than the marginal cell.

The type of this genus was not mentioned or described by Förster.

TABLE OF SPECIES.

Abdomen rufo- or brownish-piceous	2
Apex of abdomen yellow or pale rufous, otherwise black.	
Antennæ thickened toward tips, the three penultimate joints about twice as long as thick, the scape only slightly longer than the first flagellar joint ♀	M. GLABRA Ashm.
Antennæ not thickened toward tips, the joints very gradually shortening, the scape longer than the first flagellar joint ♀	M. ANALIS, sp. nov.
2. Abdomen brownish-piceous.	
Scape nearly twice as long as the first flagellar joint ♀ ..	M. COLORADENSIS Ashm.
Abdomen rufo-piceous.	
Scape shorter than the first flagellar joint, the latter emarginate at base ♂.	
	M. AMERICANA Ashm.

Miota glabra Ashm.

(Plate XIV, Fig. 2, ♀.)

Bull. No. 1, Col. Biol. Assoc., p. 12.

♀. Length, 2.6^{mm}. Black, shining, pubescent. Mandibles pale. Antennæ 15-jointed, cylindrical, a little thickened toward tips, brown, darker at tips; the scape is only slightly longer than the first flagellar joint; pedicel long-oval; the joints after the first become gradually shorter, the three preceding the last about twice as long as thick, the last fusiform and about twice as long as the penultimate. Thorax with two grooves. Mesopleura with a transverse groove below the middle. Scutellum smooth, polished, with a large, deep fovea at base. Metathorax with 3 delicate keels, the posterior angles a little prominent. Legs brownish-yellow, the posterior pair somewhat rufous. Wings hyaline, pubescent, the venation brown; the marginal vein is about as long as the closed triangular marginal cell; the stigmal nervure is straight and less than half the length of the marginal. Abdomen black, polished, the apex rufous, the petiole subopaque, fluted, pubescent beneath.

HABITAT.—West Cliff, Colo.

Type ♀ in Coll. Ashmead.

Described from a single specimen, taken by T. D. A. Cockerell.

Miota analia, sp. nov.

♀. Length, 4^{mm}. Black, shining, sparsely pilose. Antennæ and legs brownish-yellow, the antennæ fuscous beyond the middle. Abdomen piceous-black, the apex yellow. The antennæ are 15-jointed, long, filiform; the scape is very long, reaching far beyond the ocelli, and longer than the first flagellar joint; the pedicel small; first flagellar joint about 6 times as long as thick, the following joints gradually shortening, the last longer than the penultimate. Mesopleura with a deep oblique groove at the middle. Scutellum convex posteriorly, with a deep fovea at base. Metathorax with 3 keels, the sides hairy. Wings hyaline, the marginal vein as long as the marginal cell; the first branch of the stigmal nervure is a little oblique. The petiole of the abdomen is not quite twice as long as the metathorax, striated; the second abdominal segment has a long sulcus at base.

HABITAT.—Carolina.

Type in Royal Berlin Museum.

Described from a single specimen, labeled "Carolina, Zimmerman."

Miota coloradensis Ashm.*Psilomma coloradense* Ashm., Bull. No. 1, Col. Biol. Assoc., p. 11.

♀. Length, 3^{mm}. Polished black, pubescent. Eyes almost bare. Mandibles brown. Antennæ filiform, broken at tips, dark-brown above, yellowish beneath; scape very long, cylindrical, nearly twice as long

as the first flagellar joint; pedicel not much longer than wide, narrowed at base; first flagellar joint about half the length of the scape, the following joints shorter. Thorax with 2 nearly parallel grooves, and between them anteriorly are 2 abbreviated grooves. Mesopleura smooth, polished, with a deep depression at the middle, terminating in a large fovea posteriorly. Scutellum smooth, rounded off posteriorly, and with a large quadrate fovea across the base. Metathorax smooth, tricarinated. Wings hyaline; veins brown; the marginal vein about as long as the short, triangular, closed marginal cell; the first branch of the radius is about one-third as long as the marginal vein, straight. Legs, including the coxæ, brownish-yellow, the posterior pair slightly obfuscated. Abdomen conic-ovate, brownish-piceous, shining; the petiole is about two and a half times as long as the metathorax, black, opaque, and fluted.

HABITAT.—West Cliff, Colo.

Type in Coll. Ashmead.

Described from a single specimen captured by T. D. A. Cockerell.

Miota americana Ashm.

Psilomma americana Ashm., Can. Ent., XIX, p. 197.

♂. Length, 3^{mm}. Slender, polished black, pubescent. Antennæ and legs pale brownish-yellow, or honey-yellow, the former dusky at tips. Collar above rufous. Eyes nearly bare. Antennæ 14-jointed, setaceous, as long as the body, pubescent; the first flagellar joint is fully as long as the scape, excised at basal half, the following joints all long, but subequal with the first. Metathorax carinated, pubescent. Wings subhyaline, the venation pale brown, the marginal cell shorter than the marginal vein, the first branch of the radius straight, one-third the length of the marginal vein. Abdomen rufo-piceous, the petiole very long, fully thrice as long as the metathorax or nearly 5 times as long as thick, shining but with grooved lines; body of the abdomen pear-shaped, very little longer than the petiole.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

ACROPIESTA Förster.

Hym. Stud. II, p. 131 (1856).

(Type *A. collaris* Först.)

Head transverse, or subglobose, the vertex convex, the occiput straight, margined; ocelli 3, very small, arranged in a triangle; eyes oval, sparsely pubescent.

Antennæ inserted on a frontal prominence; in ♀ 15-jointed, subclavate, submoniliform, the scape slightly bent, extending beyond the ocelli, pedicel rounded, first funicular joint about twice as long as thick, subcylindric, narrowed at base, truncate at tip, the joints beyond all sub-

moniliform, the last very large, fusiform, as long as the two preceding joints together; in ♂ 14-jointed, filiform, the first flagellar joint not, or scarcely, emarginate at base.

Maxillary palpi, 4-jointed; labial palpi, 3-jointed.

Mandibles short, acute, with a small tooth within.

Thorax subovoid, the prothorax visible above as a transverse ridge, produced anteriorly into a slight neck, angles straight; mesonotum trapezoidal with 2 deep furrows; scutellum convex with a deep fovea at base; metathorax carinated, with the posterior angles acute.

Front wings pubescent with a basal and a closed marginal cell; the marginal vein not as long as the marginal cell; the first branch of radius straight or but slightly oblique; hind wings with a single cell.

Abdomen conic-ovate, the petiole a little longer than thick, fluted; in ♀ 7-jointed, the second segment very large, third to sixth very short, the last acute, conical, longer than segments 3 to 6 united.

Legs clavate, pubescent; the middle and hind tibial spurs short and weak; the tarsi long, slender, the basal joint more than twice the length of the second.

***Acroplesta flavicauda*, sp. nov.**

(Pl. xiv, Fig. 3, ♀.)

♀. Length, 3^{mm}. Black, shining, the last abdominal segment yellow. Antennae 15-jointed, extending to apex of metathorax, incrassated toward tips, rufous, the last joint large, oblong, dark fuscous; first flagellar joint twice as long as the second, the joints beyond moniliform. Thorax with two furrows, the scutellum with a large deep fovea. Metathorax carinated, the sides covered with a fuscous pubescence. Tegulae yellowish. Wings subhyaline, the venation fuscous, the marginal vein two-thirds the length of the closed marginal cell, the first branch of the radius slightly oblique. Legs rufous. Abdomen conic-ovate, black, polished, the petiole not longer than the metathorax, fluted; the third, fourth, fifth, and sixth segments very short, the last longer than these united, conical and yellow.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Acroplesta subaptera*, sp. nov.**

♀. Length, 2.2^{mm}. Head globose, black; thorax and abdomen brownish-piceous; scape, pedicel, and legs brownish yellow. The whole body is polished, impunctured, and pubescent; the frontal prominence large; antennae 15-jointed, moniliform, the first flagellar joint twice as long as the second, cylindric, joints 2 to 5 round, from here to the last transverse-moniliform. Thorax with two almost parallel furrows, very slightly converging toward each other posteriorly; scutellum convex, with a deep quadrate fovea at base; mesopleura

with a smooth cross furrow on the disk; metathorax carinated. Abdomen longer than the head and thorax together, conic-ovate, the last segment conical, as long as the third, fourth, fifth, and sixth segments united, and yellowish, the ovipositor issuing from its tip; petiole scarcely twice as long as wide, fluted. Wings not fully developed, extending only to the base of the second abdominal segment, subfuscous and very pubescent.

HABITAT.—Marquette, Mich.

Type in Coll. Ashmead.

Described from a single specimen, taken at the above place by Mr. E. A. Schwarz.

BELYTA Jurine.

Hym., p. 311 (1807); Förster, Hym. Stud., II, p. 130, 133 (1856).

(Type *B. bicolor* Jur.)

Head subglobose, the occiput narrowed, rounded; ocelli small, in a triangle; eyes rounded, hairy.

Antennæ inserted on a very prominent frontal projection; in ♀ 15-jointed, stout, moniliform or submoniliform, the scape stout, reaching far above the head, the pedicel rounded, the first flagellar joint obconic, the following joints to last moniliform or transverse-moniliform, usually increasing in size toward apex, the last oblong or ovate; in ♂ 14-jointed, long, filiform, the scape extending beyond the ocelli, pedicel rounded, the first flagellar joint about two-thirds the length of the scape, profoundly excised at base, the following shorter, cylindrical, 3 or 4 times larger than thick.

Maxillary palpi 5-jointed, long; labial palpi short, 3-jointed.

Thorax subovoid, depressed, the prothorax distinct from above, rounded before, the angles obtuse; mesonotum with 2 deep furrows; scutellum not very prominent, subconvex, with a profound fovea at base, and without lateral grooved lines; metathorax with the middle carina not extending to the apex, interrupted or broken, sometimes wanting, posterior angles prominent, acute.

Front wings pubescent, with a basal cell, and usually, but not always, with an open or imperfectly formed marginal cell; the marginal vein short; the first branch of radius short, oblique, with a hook or slight branch at tip; hind wings with one cell.

Abdomen ovate or oblong oval, depressed, 8-jointed, the petiole stout, seldom twice as long as thick, fluted, the second segment very large, with a longitudinal sulcus at base; the following segments all short, the last subtriangular.

Legs rather stout, clavate, pilose, the middle and hind tibiæ subclavate; tibial spurs 1, 2, 2, the last two short, but stout; tarsi 5-jointed, the basal joint nearly 3 times as long as the second.

TABLE OF SPECIES.

FEMALES.

Marginal cell closed.

Wings fuscous or subfuscous.

Coxæ black, legs honey-yellow.

Flagellum fuscous..... B. MONILICORNIS Ashm.

Coxæ and legs brownish-yellow.

Flagellum brownish-yellow, the three apical joints dusky.

Metathorax without a median carina..... B. FRONTALIS sp. nov.

Coxæ and legs rufous.

Metathorax with a forked median carina..... B. ERYTHROPUS sp. nov.

Marginal cell open.

Wings hyaline.

Metathorax with a forked median keel..... B. TEXANA sp. nov.

***Belyta monilicornis* Ashm.**

Bull. No. 1, Col. Biol. Assoc., p. 12.

♀. Length, 3^{mm}. Robust, black, shining, covered with a fine fuscous pubescence. Eyes bristly. Mandibles piceous. Antennæ 15-jointed, the flagellar joints after the first moniliform, the first joint about twice as long as the pedicel; the scape reddish brown, the rest of the antennæ dark fuscous. Mesonotal furrows distinct, but not deeply impressed. Scutellum with a large fovea at base. Mesopleura deeply impressed posteriorly. Metathorax truncate and squared off at apex. Legs dark honey yellow, the coxæ black, the hind femora slightly dusky above in the middle. Abdomen about as long as the head and thorax together, smooth and polished; the petiole stout, a little longer than thick, grooved and hairy above; the second segment, which occupies the larger portion of the body of the abdomen, has a median longitudinal furrow at base; apex surrounded by sparse, whitish hairs. Wings subhyaline, pubescent, the marginal cell closed, about twice as long as the marginal vein, the first branch of the radius or stigmal vein oblique.

HABITAT.—West Cliff, Col.

Type ♀ in Coll. Ashmead.

Described from a specimen received from T. D. A. Cockerell.

***Belyta frontalis*, sp. nov.**

(Pl. xiv, Fig. 4, ♀.)

♀. Length, 3^{mm}. Polished black, the abdomen brownish; frontal prominence very large, half the length of the head. Antennæ 15-jointed, incrassated toward tips, moniliform, brownish yellow, the two or three apical joints fuscous; scape very long, stout; first flagellar joint twice the length of the pedicel, the following joints to the last moniliform, the last oblong. Mandibles, palpi, and legs pale brownish yellow. Metathorax without a median carina, but with delicate lateral carinæ, the disk polished, the apex margined, the lateral angles acute. Wings subhyaline, the venation pale, the marginal vein one-third

longer than the oblique first branch of the radius, the marginal cell closed, a little longer than the marginal vein. Petiole stout, scarcely longer than the metathorax, fluted.

HABITAT.—Delaware.

Type ♀ in Coll. American Entomological Society.

Described from a single specimen.

***Belyta erythropus* sp. nov.**

♀. Length, 3.4^{mm}. Black, shining, sparsely pilose; antennæ and legs rufous or reddish-yellow, the flagellum infuscated, the hind coxæ black basally. Antennæ 15-jointed, moniliform, the first flagellar joint one-third longer than the pedicel, the joints beyond transverse-moniliform, very slightly increasing in size toward the apex, the last conic. Scutellum with a transverse fovea at base. Metathorax with the middle carina forked at the middle; angles bluntly toothed. Wings subfuscous; tegulæ rufous; nervures pale brown; the marginal vein is not longer than the short, closed marginal cell; the first branch of the radius or stigmal vein oblique. Abdomen not longer than the thorax, the sides, apex and beneath, pilose; the petiole is stout, striate, and finely rugose, a little longer than thick; the second segment with some grooved lines at base.

HABITAT.—Wisconsin.

Type ♀ in Royal Berlin Museum.

Described from a single specimen labeled simply, "Wisconsin, Kumin."

***Belyta texana*, sp. nov.**

♀. Length, 3.4^{mm}. Polished black; antennæ rufous; legs reddish-yellow. Antennæ 15-jointed, stout, the first flagellar joint only a little longer than the pedicel, the joints beyond transverse-moniliform, the last oval. Scutellum flattened, with a deep fovea at base. Metathorax finely rugose, the middle keel forked before the middle, the posterior angles produced. Tegulæ rufous. Wings hyaline, the marginal cell open, the marginal vein longer than the stigmal, the latter with a hook.

Abdomen scarcely as long as the head and thorax together; the petiole short, stout, rugose, scarcely longer than thick, and without any raised lines; base of second segment striated.

HABITAT.—Texas.

Type ♀ in Coll. American Entomological Society.

Described from a single specimen.

OXYLABIS Förster.

Hym. Stud., II, p. 130 (1856).

Lyteba Thoms. Öfv., 1858, p. 180.

(Type *O. bisulca* Nees.)

Head transverse, a little wider than the thorax, the occiput straight, not margined; ocelli 3, prominent, subtriangularly arranged; eyes oval, hairy.

Antennæ inserted on a frontal prominence; in ♀ 15-jointed, submoniliform; the scape subrobust, extending slightly beyond the ocelli, cylindrical; pedicel oblong; first flagellar joint longer, obconic; the joints after the fourth, moniliform or submoniliform, the last ovate; in ♂ 14-jointed, long, filiform, the first flagellar joint about two-thirds the length of the scape, the following a little shorter, all covered with a short pubescence.

Maxillary palpi long, 5-jointed, the last joint the longest; labial palpi short, 3-jointed.

Mandibles short, curved, acute at tip, with a small tooth within.

Thorax as in *Belyta*, but with a large, acute spine at base of metathorax, the scutellum highly convex, with a furrow at sides, the posterior angles of the metathorax acute.

Front wings pubescent, with a basal cell and a closed marginal cell, rarely a little open toward apex. The marginal cell is always distinctly longer than the marginal vein, the stigmal being more or less oblique; hind wings with one cell.

Abdomen oval or oblong-oval, the petiole stout, fluted, a little longer than thick (longer and more slender in the ♂), the second segment very large, occupying most of the surface, sulcate at base, the following segments very short.

Legs as in *Belyta*, pilose, the tibial spurs distinct, basal joint of hind tarsi twice as long as the second.

***Oxylabis spinosus* Prov.**

(Pl. XIV, Fig. 5, ♀.)

Aneurthynchus spinosus Prov., Faun. Hym., II, p. 560.

Oxylabis spinosus Prov., Add., p. 405.

♀. Length, 2.5^{mm}. Robust, polished black; legs and antennæ rufous. Antennæ 15-jointed, submoniliform; the pedicel is about half as long as the first flagellar joint, which is the longest joint; the three following joints longer than thick, the remaining joints moniliform. Mesonotum with two broad, deep furrows. Scutellum with a deep fovea at base, posteriorly elevated, convex. Postscutellum with a large, acute, rufous spine. Metathorax with a central groove, posteriorly margined, the angles acute. Tegulae rufous. Wings fuscous, the marginal vein long, the marginal cell almost closed. Abdomen oblong-oval, covered with a grayish pubescence; the petiole broad and stout, hardly longer than thick, fluted; the second segment very large, with sparse punctures and channeled or grooved at base, the following segments very short.

HABITAT.—Cap Rouge, Canada, and Arlington, Va.

Type ♀ in Coll. Provancher.

The above description is drawn up from a specimen, agreeing in all particulars with Provancher's description, and collected by myself in Virginia.

CINETUS Jurine.

Hym., p. 310 (1807); Förster, Hym. Stud., II, pp. 130, 138 (1856).

Head transverse, or subglobose, the occiput rounded; ocelli small, triangularly arranged on the vertex; eyes oval, pubescent.

Antennæ inserted on a frontal prominence; in ♀ 15-jointed, filiform, or at the most subfiliform, rarely slightly thickened at tips, the scape long, cylindrical, reaching considerably beyond the ocelli; pedicel small, rounded, the first flagellar joint from one-half to two-thirds the length of the scape; the following joints cylindrical, becoming quite short before the last, the last a little longer than the penultimate; it is rare that the joints are moniliform; in ♂ 14-jointed, very long, cylindrical, sub-setaceous, pubescent, the scape slender, a little longer than the first flagellar joint; pedicel rounded; first flagellar joint excised at base, the following joints five or more times longer than thick.

Maxillary palpi 5-jointed; labial palpi 3-jointed.

Mandibles short, curved, with a small tooth within.

Thorax subovoid, the pronotum produced anteriorly into a small, rounded neck; mesonotum longer than wide, with two furrows; scutellum convex, with a profound fovea at base; metathorax short, carinated, the posterior angles not prominent or produced into a tooth.

Front wings broad, pubescent, with a basal cell, a closed marginal cell about as long as the marginal vein or longer, the first branch of the radius slightly oblique and the postmarginal nervure well developed.

Abdomen conic-ovate, with eight segments, the petiole in both sexes very long, four or more times longer than thick, the third segment longer than the fourth.

Legs slender, pilose, the femora subclavate, the tarsi very long, slender, the posterior tarsi longer than their tibiae, the basal joint $2\frac{1}{2}$ times as long as the second, the tibial spurs weak, scarcely discernible.

TABLE OF SPECIES.

FEMALES.

Polished black; abdomen sometimes rufous.

Antennæ somewhat thickened toward tips, rufous, joints 8 to 14 transverse-quadrate.

Marginal cell a little more than twice the length of the marginal vein.

C. RUFICORNIS sp. nov.

Antennæ filiform, the flagellum fuscous.

Second flagellar joint two-thirds the length of the first; marginal cell 3 times the length of the marginal vein; body of abdomen dull rufous basally.....C. MACRODYCTIUM Ashm.

Second and first flagellar joints equal; legs honey-yellow; abdomen black.

Marginal cell twice as long as the marginal vein; flagellar joints 13 and 14 equal.....C. MELLIPES Say

Marginal cell thrice as long as the marginal vein; flagellar joint 13 distinctly longer than 14.....C. SIMILIS sp. nov.

MALES.

Antennæ rufous, fuscous toward tips; legs rufous.

Marginal cell thrice as long as the marginal vein; abdomen rufous, the third segment not more than twice as long as the fourth.

C. MACRODYCTIUM Ashm.

Marginal cell not thrice the length of the marginal vein; abdomen black, the third segment about 4 times as long as the fourth.

C. CALIFORNICUS sp. nov.

Cinetus ruficornia, sp. nov.

♀. Length, 3^{mm}. Polished, black; antennæ rufous; tegulæ and legs brownish-yellow. Antennæ 15-jointed, subclavate, the first flagellar joint a little more than twice as long as the pedicel, the joints beyond to the eighth gradually subequal, the eighth moniliform, the ninth, tenth, eleventh, and twelfth, transverse, the last cone-shaped. Metathorax carinated, the space between the keels smooth, shining. Wings hyaline, the venation brown, the marginal cell twice as long as the marginal vein, the first branch of the radial vein slightly oblique, a little shorter than the marginal. Abdomen conic-ovate, the petiole 1½ times as long as the metathorax, fluted, the second segment with a longitudinal sulcus at base, the third segment twice as long as the fourth, the seventh as long as the fourth, fifth, and sixth together, piceous, eighth very short, yellowish.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Cinetus macrodyctium, sp. nov.

♂ ♀. Length, 3 to 3½^{mm}. Black, polished, pubescent; legs rufous; abdomen dull rufous, in ♀ with the petiole black. Antennæ in ♀ about as long as the body, filiform, 15-jointed, dark fuscous, pubescent, the first two joints rufous; first flagellar joint about one-third longer than the second, the joints beyond to eighth gradually shortening, the eighth being about half the length of the second; the joints from 8 to the last short, all, however, longer than thick, the last longer than the penultimate; in ♂ 14-jointed, the joints all long, cylindrical; the first three rufous, the following fuscous; the first flagellar joint is as long as the scape, and a little longer than the second, excised at base. Wings hyaline, pubescent, the marginal cell thrice as long as the marginal vein; the stigmal vein almost straight, about half the length of the marginal, or a little longer in the ♂. Abdomen a little longer than the head and thorax together, the petiole in ♂ strongly fluted, about twice the length of the metathorax, in ♀ a little shorter; rest of the body polished, pubescent; the second segment at base with a longitudinal sulcus.

HABITAT.—Arlington, Va., and West Cliff, Colo.

Types in Coll. Ashmead.

The ♀ of this species was received from Mr. T. D. A. Cockerell, from Colorado, but I have no doubt it is properly correlated with a ♂ taken in Virginia, as it agrees in venation and general appearance, although the color of the abdomen is slightly different.

***Cinetus mellipes* Say.**

(Pl. XIV, Fig. 6, ♀.)

Belyta mellipes Say Lec., Ed. Say's Works, II, p. 726.

Xenotoma mellipes Ashm. Can. Ent., XIX, p. 199.

Cinetus mellipes Cr. Syn. Hym., p. 250.

♀. Length, 2.5^{mm}. Polished black, shining, pubescent; antennæ fuscous, the first two joints honey-yellow; legs honey-yellow. Antennæ 15-jointed, filiform, reaching to the middle of the abdomen; scape more than twice as long as the first flagellar joint; first and second flagellar joints equal, 3 times as long as the pedicel; the following joints to eighth gradually shortening; from here to the last much shorter, the thirteenth and fourteenth being only a little longer than thick, equal, and shorter than the last which is conic. Wings hyaline, the marginal cell only twice the length of the marginal vein, the venation fuscous. Abdomen one-third longer than the head and thorax together, the petiole being more than twice as long as the metathorax, fluted; the body of abdomen is smooth, shining, covered with sparse white hairs along the sides, at tip and beneath, the first segment occupying nearly the whole surface, with a longitudinal sulcus at base; the second is very short, but twice the length of the third; the last conic, piceous.

HABITAT.—Indiana and Arlington, Va.

Specimens in Coll. Ashmead.

***Cinetus similis*, sp. nov.**

♀. Length, 2.8^{mm}. Polished black, pubescent; scape, pedicel, and legs honey-yellow; rest of antennæ subfuscous. Head transverse, wider than the thorax. Antennæ 15-jointed, filiform; the scape fully 4 times as long as the first flagellar joint, obclavate, first and second flagellar joints equal, twice as long as the pedicel or a little more than 3 times as long as thick, the following joints very gradually subequal, the last conical, one-third longer than the penultimate. Wings hyaline, pubescent, the marginal cell about 3 times as long as the marginal vein. Abdomen conic-ovate, black, polished, the petiole opaque, fluted, nearly twice the length of the metanotum, the third segment short but about twice the length of the fourth.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Allied to *C. mellipes* Say, but differs in the relative length of the antennal joints and in having a longer marginal cell.

***Cinetus californicus*, sp. nov.**

♂. Length, 2.5^{mm}. Polished black, nearly devoid of pubescence, the

petiole beneath with long, sparse hairs. Antennæ fuscous, the scape and pedicel rufous, yellowish at base, the joints long, cylindrical, the first flagellar joint the longest. Legs reddish-yellow, paler at articulations. Tegulæ yellowish. Wings hyaline, the venation dark brown. Metathorax smooth, shining, carinated. Abdomen black, shining, depressed, the petiole $2\frac{1}{2}$ times as long as the metathorax, striated, the second segment striated at the extreme base, with a central longitudinal sulcus, the third segment nearly as long as all the following together.

HABITAT.—Santa Cruz Mountains, California.

Type in Coll. Ashmead.

Described from a single specimen. The length of the third abdominal segment renders this species easy of identification.

***Cinetus nasutus* Prov.**

Add. et Corr., p. 178; Cress., Syn. Hym., p. 251.

♀. Long. 15 pce. Noir avec les pattes roux-jaunâtre. La face prolongée en museau dans sa partie inférieure. Tête subglobuleuse; les antennes fortes, de 15-articles, le 1^{er} très long, les derniers granuleux, s'épaississant insensiblement en masse, quelque peu brunâtre. Thorax rétréci en avant, les sillons parapsidaux du mésonotum profonds, le divisant en 3 lobes. Ailes hyalines, velues, à radiale très petite, la nervure stigmatique en voyant un rayon vers la base de l'aile. Pattes d'un beau jaune-miel, sans aucune tache. Abdomen à pédicule fort et assez allongé, scabre, le reste en oval, déprimé, poli, le 2^e segment très grand avec une petite fossette à la base. (Provancher.)

HABITAT.—Ottawa, Canada.

Type in Coll. Provancher.

Not recognized, and probably not a true *Cinetus*.

***XENOTOMA* Förster.**

Hym. Stud., II, p. 129 (1856).

Acoretus Hal., Nat. Hist. Rev., 1857, p. 169.

(Type *X. bicolor* Nees nec Jurine).

Head transverse, the occiput delicately margined behind; ocelli 3, triangularly arranged; eyes broadly oval, pubescent.

Mandibles large, acute, sickle-shaped, crossing each other at tips.

Antennæ inserted on a frontal prominence, filiform or subfiliform, in ♀ 15-jointed, the 5 or 6 terminal joints very short, the last conic or ovate, the scape cylindric, a little curved, and swollen at the middle; the first flagellar joint is about twice as long as thick and a little longer than the second; in ♂ 14-jointed, the scape not, or scarcely, reaching beyond the ocelli, the first flagellar joint as long, or nearly as long, as the scape, excised at base.

Thorax subovoid, the anterior angles of pronotum straight; mesonotum with 2 furrows; scutellum convex, depressed, and with a deep fovea at base; metathorax as long as high, carinated, truncate, and margined posteriorly.

Front wings pubescent, the marginal fringe short, a basal and a closed marginal cell, the marginal vein never as long as the marginal cell,

usually about half as long; stigmal vein or first branch of the radius slightly oblique.

Abdomen conic-ovate, the tip with a slight upward curve, the petiole as long as, or a little longer than, the metathorax, distinctly fluted or striated; the third segment is short, but usually longer than the fourth.

Legs much as in *Cinetus*, but with the tibial spurs distinct.

This genus is at once recognized by the long falcate mandibles.

The species known to me may be separated as follows:

Head, thorax, and petiole black.

Scape, pedicel, and legs yellow ♂ X. XANTHOPUS sp. nov.

Head, except clypeus, black; thorax and abdomen dull rufous.

Antennæ and legs brownish-yellow ♂ X. MANDIBULARIS sp. nov.

Brownish; vertex and disk of thorax blackish ♀ X. XANTHOPUS.

***Xenotoma xanthopus*, sp. nov.**

♂. Length, 2.4^{mm}. Polished black, pubescent; the abdomen reddish-brown; mandibles, palpi, two basal joints of antennæ, and legs bright yellow; flagellum fuscous. Antennæ 15-jointed, setaceous, the scape very little longer than the first flagellar joint; the first flagellar joint the longest, slightly excised at base, the joints beyond very slightly shortening. Metathorax smooth, with a middle carina, the lateral carinæ irregular and broken, descending obliquely toward the posterior coxæ. Wings hyaline, the marginal cell fully two and a half times as long as the marginal vein. Abdomen as long as the head and thorax together, pilose beneath, the petiole a little longer than the metathorax with raised lines.

♀. Length, 3^{mm}. Brownish, with a fuscous pubescence; vertex of head and disk of thorax blackish; antennæ, mandibles, palpi, and legs yellow. Antennæ 15-jointed, filiform, a little shorter than the body; scape more than thrice as long as the first flagellar joint; pedicel rounded; first flagellar joint nearly thrice as long as the pedicel, the joints beyond to sixth very gradually subequal, joints from sixth to last hardly longer than thick. Abdomen a little longer than the head and thorax together, the petiole twice as long as the metathorax, fluted, the third segment one-third longer than the fourth, the second, with faint punctures laterally otherwise it agrees with ♂.

HABITAT.—New Jersey.

Types in Coll. Ashmead.

Described from 1 ♂ and 1 ♀ specimen.

***Xenotoma mandibularis*, sp. nov.**

(Pl. XIV, Fig. 7, ♀.)

♂ ♀. Length, 2.5^{mm}. Polished, pubescent; head black, the thorax and abdomen varies from a blackish or brown to dull rufous, more especially rufous in the ♂. Antennæ and legs pale brownish-yellow. Mandibles long, sickle-shaped, crossing and extending far beyond each other at tips. Eyes oval, vertical. Antennæ in ♀ 15-jointed, filiform,

the first flagellar joint thrice as long as the pedicel, the joints beyond to the ninth gradually shortened, joints tenth to thirteenth about equal, a little longer than thick; in ♂ 14-jointed, filiform, the first flagellar joint excised at base, about two-thirds as long as the scape, all the joints beyond long, cylindric, subequal. Metathorax short, abrupt, and keeled, the posterior angles subacute. Wings hyaline, the marginal cell scarcely twice as long as the marginal vein, the stigmal slightly shorter than the marginal. Abdomen ovate, depressed, the petiole slightly more than twice as long as the metathorax, in ♂ fluted, in ♀ with a short striate sculpture but not distinctly fluted or grooved.

HABITAT.—Texas.

Types in Coll. Ashmead.

Described from two specimens.

ZELOTYPA Förster.

Hym. Stud., II, p. 130 (1856).

Head transverse, the ocelli in a triangle, the eyes oblong-oval, pubescent.

Antennæ inserted on a frontal prominence, in ♀ 15-jointed, filiform, cylindrical, the last joint enlarged, fusiform, the scape long, slender, extending far above the ocelli; in ♂ 14-jointed, the scape extending scarcely beyond the ocelli, the first flagellar joint about two-thirds the length of the scape, excised at base.

Mandibles meeting at tips, bifid.

Thorax subovoid, the anterior angles of pronotum straight; mesonotum with 2 furrows; scutellum convex, with a deep fovea at base; metathorax carinated, the posterior angles not prominent.

Front wings with a basal and a closed marginal cell, the latter large, much larger than the marginal vein, the marginal vein being usually shorter than half the length of the marginal cell; stigmal or first abscissa of radius straight, at a right angle with the margin.

Abdomen ovate, the petiole not or scarcely longer than the metanotum, strongly fluted or striated.

Legs rather long, pubescent; the anterior tibiæ clavate, their tarsi twice as long as the tibiæ; middle and hind tibiæ long, slender, very little shorter than their tarsi; basal joint of hind tarsi about 3 times as long as the second; tibial spurs short.

The type of this genus has never been described. Our species may be thus tabulated:

TABLE OF SPECIES.

MALES.

Antennæ rufous.....	3
Antennæ blackish or fuscous, the three or four basal joints pale rufous.	
Marginal vein shorter than the marginal cell and less than twice as long as the first branch of radius	2
Marginal vein as long as the marginal cell, or 2½ times as long as the first branch of radius.	
Legs reddish-yellow.....	Z. TEXANA, sp. nov.

2. Legs brownish-yellow.

Marginal cell $2\frac{1}{2}$ times as long as the marginal vein; abdomen brownish or rufous basallyZ. LONGICORNIS, sp. nov.

Legs yellow.

Marginal cell hardly twice as long as the marginal vein; abdomen entirely black.....Z. FLAVIPES, sp. nov.

3. Marginal cell and the marginal vein long, about equal in length.

Legs reddish-yellow.....Z. RUFICORNIS, sp. nov.

***Zelotypa texana*, sp. nov.**

♂. Length, 2.5^{mm}. Polished black, with a glittering pubescence; antennæ fuscous, the three basal joints yellow; legs reddish-yellow. Face with white pile. Angles of collar acute. Antennæ 14-jointed, filiform, the first flagellar joint thrice as long as the pedicel, very slightly excised at the base, the following joints shorter, subequal. Metathorax carinated, pubescent. Wings hyaline, the venation brown, the marginal cell about as long as the marginal vein, the latter fully $2\frac{1}{2}$ times as long as the straight first branch of radius. Abdomen long, oval, the petiole $2\frac{1}{2}$ times as long as thick, fluted.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen.

***Zelotypa longicornis*, sp. nov.**

(Pl. xv, Fig. 1, ♂.)

♂. Length, 3.2^{mm}. Polished black, pubescent; antennæ fuscous, basally yellowish; tegulæ and legs brownish yellow. Antennæ 14-jointed, filiform, and pubescent, longer than the body, the first flagellar joint as long as the scape, excised one-third its length at base, the joints beyond all long, very gradually shortened, the penultimate nearly 5 times as long as thick. Metathorax carinated. Wings subfuscous, the marginal cell long, $2\frac{1}{2}$ times as long as the marginal vein, the latter $\frac{1}{2}$ longer than the stigmal. Abdomen ovate, black, shining, the second segment rufous basally, the petiole $1\frac{1}{2}$ times as long as the metathorax, or $2\frac{1}{2}$ times as long as thick, fluted.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

***Zelotypa flavipes*, sp. nov.**

♂. Length, 2 $\frac{1}{2}$ ^{mm}. Polished black, sparsely pubescent, more densely pubescent on the abdomen beneath; antennæ dark fuscous, almost black, the three basal joints rufous; legs pale yellow. Antennæ 14-jointed, as long as the body, the first flagellar joint two-thirds the length of the scape, excised for nearly half its length basally, the joints beyond gradually decreasing, the penultimate scarcely thrice as long as thick, the last a little longer. Metathorax carinated. Wings subfuscous, the marginal cell not more than twice as long as the marginal vein, the latter about twice as long as the straight first branch of radius. Abdomen

oblong-oval, black, polished, with a glittering white pile beneath, the petiole more than twice as long as thick, fluted.

HABITAT.—Fort George Island, Fla.

Type in Coll. Ashmead.

Zelotypa ruficornis, sp. nov.

♂. Length, 3^{mm}. Polished black, covered with a sparse white pubescence; antennæ pale rufous; legs reddish-yellow, the tarsi pale. Antennæ 14-jointed, slender, filiform, as long as the body, the first flagellar joint a little shorter than the scape, strongly excised half its length basally, the following joints all long, slightly subequal, about 5 times as long as thick. Metathorax carinated. Wings subhyaline, the marginal cell as long as the marginal vein, the latter nearly twice as long as the stigmal. Abdomen oblong-oval, black, shining, the tip and beneath with white hairs, the petiole very long, more than twice as long as the metathorax, or about 3½ times as long as thick, fluted.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

PANTOCLIS Förster.

Hym. Stud., II, p. 131 (1856).

(Type ? *Balyta brevis* Nees.)

Head subglobose or transverse, the occiput rounded; ocelli 3, close together in a triangle; eyes broadly oval or rounded, pubescent. Antennæ inserted on a frontal prominence; in ♀ 15-jointed, gradually thickened toward tips, submoniliform or moniliform; the scape is stout and extends to or a little beyond the ocelli, or about as long as the first four or five flagellar joints united; pedicel rounded; the first flagellar joint a little longer than thick, obconic; the second and third short, the following gradually enlarged, moniliform, submoniliform, or transverse; in ♂ 14-jointed, filiform or setaceous, densely pubescent; first flagellar joint about two-thirds as long as the scape, excised basally, the following joints shorter, the three or four joints before the last less than three times as long as thick, rarely longer.

Mandibles acute with a tooth within, slightly crossing each other at tips. Thorax as in *Zelotypa*, the posterior angles of metathorax often prominent.

Front wings pubescent, with a basal cell and a small triangular closed marginal cell, the marginal vein short, rarely much longer than the first abscissa of the radius, the latter oblique.

Abdomen ovate, more rarely oblong-oval, the petiole short, the second segmen occupying most of the surface, with a median longitudinal sulcus at base, the following segments short, about equal; in the ♂ the petiole is longer, about three times as long as thick.

Legs pubescent, the tibial spurs short but distinct.

TABLE OF SPECIES.

- Antennæ not black..... 2
- Antennæ black or piceous-black.
- Hind coxæ black.
- Legs rufous..... *P. MONTANA*, sp. nov.
- Femora and tibiæ more or less black or piceous..... *P. PICIPES*, sp. nov.
2. Marginal vein shorter than the stigmal..... 3
- Marginal vein longer than the stigmal.
- Legs yellowish.
- Scape and pedicel yellowish, flagellum fuscous.
- Last joint of antennæ enlarged, oblong, about 5 times as long as the preceding.
- Metathorax and abdomen brownish..... *P. MEGAPLASTA*, sp. nov.
- Antennæ brownish-yellow or only fuscous toward tips.
- Antennæ subclavate, moniliform.
- Marginal cell twice as long as the marginal vein, the first branch of radius only slightly oblique..... *P. INSULARIS*, sp. nov.
- Antennæ much incrassated, moniliform.
- Marginal cell not longer than the marginal vein, the first branch of radius very oblique..... *P. CRASSICORNIS*, sp. nov.
3. Marginal cell about 5 times as long as the marginal vein, the first branch of radius oblique, twice as long as the marginal vein.
- Legs pale rufous or brownish-yellow.
- Antennæ rufous, dusky towards tips, the first flagellar joint twice as long as the pedicel, the following joints moniliform, after the fourth transverse-moniliform.
- Abdomen rufo-piceous, the tip reddish-yellow..... *P. ANALIS*, sp. nov.
- Marginal cell about four times as long as the marginal vein, the first branch of radius oblique, very little longer than the marginal vein.
- Legs pale rufous or brownish-yellow.
- Antennæ brownish-yellow, slightly fuscous toward tips, the first flagellar joint twice as long as the pedicel, the following joints all round, moniliform.
- Abdomen black, the apex rufous..... *P. RUFICAUDA*, sp. nov.
- Antennæ fuscous, the three basal joints yellow.
- Abdomen black, base of second segment above and beneath, rufous; flagellar joints after the fifth less than twice as long as thick.
- P. FLAVIPES*, sp. nov.
- Abdomen entirely black; flagellar joints after the fifth thrice as long as thick..... *P. COLORADENSIS* Ashm.
- Marginal cell not more than thrice as long as the marginal vein or shorter, the first branch of radius oblique.
- Antennæ and legs rufous, the former incrassated and fuscous toward tips.
- First flagellar joint about twice as long as the pedicel, the joints after the fourth transverse-moniliform..... *P. CALIFORNICA*, sp. nov.
- First flagellar joint twice as long as the pedicel, the joints after the third transverse-moniliform, slightly pedicellate; body brownish-piceous.
- P. RUFESCENS*, sp. nov.
- Antennæ and legs pale brownish-yellow, the former filiform, dusky toward tips.
- First flagellar joint more than twice as long as the pedicel, the joints after the third equal, not longer than thick..... *P. FLORIDANA*.

Pantoolis montana, sp. nov.

♂ ♀. Length, 2.5 to 3.2^{mm}. Polished black, pubescent; legs rufous, the hind coxæ black. Antennæ in ♀ 15-jointed, subclavate, the joints rounded, the first flagellar joint twice as long as the pedicel, slender towards the base; the second about half the length of the first, the joints from the fifth quadrate-moniliform, slightly pedicellate, the last one-shaped; in ♂ 14-jointed, long, setaceous, the first flagellar joint two-thirds the length of the scape, excised towards base, the following joints subequal, the penultimate twice as long as thick, the last one-third longer. Metathorax with 5 keels, a central, and two parallel lateral keels; the lateral angles prominent. Abdomen conic-ovate, a little depressed; the petiole as long as the metathorax, strongly fluted; the third, fourth, and fifth segments very short, equal; the sixth slightly longer; the seventh more than twice as long as the sixth and slightly longer than the eighth.

HABITAT.—Santa Cruz Mountains, California and Colorado.

Types in Coll. Ashmead.

Described from several specimens.

Pantoolis picipes, sp. nov.

♂. Length, 2.6^{mm}. Polished black; antennæ piceous-black, the base of the first flagellar joint pale brown; legs piceous, trochanters, tips of femora, and tibiae and tarsi, brownish-yellow. Antennæ 14-jointed, setaceous, as long as the body, the first flagellar joint two-thirds the length of the scape, the joints beyond shorter, very gradually shortened to the last, which is a little longer, the penultimate being about thrice as long as thick. Tegulae piceous. Wings subfuscous, the venation brown, the marginal cell less than twice as long as the marginal vein, the first branch of radius very oblique and very little shorter than the marginal. Metathorax with 5 keels. Abdomen smooth, shining, with a sparse white pile along the sides at tip and beneath, the petiole not quite as long as the metathorax, channelled.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Pantoolis megaplasta, sp. nov.

♀. Length, 2^{mm}. Head and thorax black; metathorax and abdomen brownish-piceous; antennæ fuscous; the scape, pedicel, and legs pale brownish-yellow. Antennæ 15-jointed, filiform, the last joint enlarged, oblong, about 5 times as large as the penultimate joint, the first flagellar joint very slightly longer than the pedicel, but slenderer, the following joints subequal, the 2 penultimates scarcely longer than thick. Tegulae yellow. Wings hyaline, the venation pale brown, the marginal cell twice as long as the marginal vein, the first branch of the radius oblique, shorter than the marginal. Metathorax keeled, brownish. Abdomen brownish-piceous, the tip slightly turned upwards, the petiole a little more than twice as long as thick, fluted.

HABITAT.—Manhattan, Kans.

Type in Coll. Ashmead.

Described from a single specimen received from Prof. E. A. Popenoe.

The large terminal antennal joint and the color of the abdomen, the tip curving upwards, readily distinguish the species.

Pantoclis insularis, sp. nov.

♂ ♀. Length, 2 to 2.6^{mm}. Polished black, pubescent; antennæ and legs brownish-yellow. Antennæ in ♀ 15-jointed, gradually thickened toward tips, the last joint cone-shaped, twice as long as the penultimate, scape more than thrice as long as the first flagellar joint, the latter twice as long as the pedicel, the joints beyond to the seventh shortening, from the seventh to the last moniliform, wider than long; in ♂ 14-jointed, setaceous, fuscous, the first flagellar joint excised at base, a little shorter than the scape, the latter yellowish, the joints beyond subequal. Tegulæ yellow. Wings hyaline, the venation yellowish, the marginal cell twice as long as the marginal vein, the first branch of the radius two-thirds the length of the marginal. Metathorax with 3 keels, smooth on disk. Abdomen black, the tip turned upwards, the second segment basally and the sixth rufous, venter pilose, the petiole $1\frac{1}{2}$ times as long as thick, fluted.

HABITAT.—Fort George Island, Florida.

Types in Coll. Ashmead.

Described from several specimens.

Pantoclis crassicornis, sp. nov.

♂ ♀. Length, 3 to 4^{mm}. Polished black, and covered with a fuscous pubescence; antennæ, mandibles, and legs rufous. Head in ♀ longer than wide, the face with two furrows extending to the clypeus. Antennæ 15-jointed, much incrassated, the scape very stout, as long as the pedicel and first four flagellar joints united, the first flagellar joint about twice as long as the pedicel, the joints beyond moniliform, after the sixth transverse-moniliform and slightly pedicellate. Tegulæ rufous. Wings, subfuscous, the venation brown, the marginal cell not longer than the marginal vein, the first branch of the radius oblique, about half the length of the marginal. Metathorax flat, keeled, with the posterior angles prominent. Abdomen oblong ovate, depressed, black, pubescent, as long as the head and thorax together, the second segment rufo-piceous basally, the petiole stout, about as long as the metathorax.

The ♂ is the smaller, more slender, the head transverse, the antennæ 14-jointed, filiform, brown; the scape and pedicel yellow; the flagellar joints nearly equal in length; the first emarginated at base; none of the joints are less than 4 times as long as thick.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Pantoclis analia, sp. nov.

(Pl. xv, Fig. 2, ♀.)

♀. Length, 3.2^{mm}. Polished black, sparsely pubescent; antennæ rufous, blackish toward tips; legs brownish-yellow. The frontal prominence beneath is rugoso-punctate. Antennæ 15-jointed, thickened toward tips, moniliform; the scape rather stout, twice as long as the pedicel, the joints beyond moniliform, after the second, transverse-moniliform, the last conic, a little longer than the penultimate. Mesopleura impressed with a large fovea. Tegulae yellowish. Wings subhyaline, the marginal cell about five times as long as the marginal vein, the latter shorter than the oblique first branch of the radius. Metathorax carinated. Abdomen rufo-piceous, the two last segments reddish-yellow, the seventh and eighth segments about equal, as long as the third, fourth, and fifth united; the spiracles distinct; the petiole stout, as long as the metathorax, fluted.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen captured by E. A. Schwarz.

Pantoclis ruficauda, sp. nov.

♀. Length, 3^{mm}. Polished black; the apex of abdomen with long white hairs, the last segment conically pointed, reddish; antennæ and legs brownish-yellow, the former dusky toward tips. Antennæ 15-jointed, filiform-moniliform, the first flagellar joint twice as long as the pedicel, the joints beyond to the last, equal, moniliform, scarcely wider than long, the last cone-shaped, a little longer than the penultimate; metathorax carinated. Tegulae yellow. Wings subhyaline, the marginal cell hardly 5 times as long as the marginal vein, the latter very slightly shorter than the oblique first branch of the radius. Abdomen conic-ovate, black, highly polished, the last segment conically pointed, twice as long as the seventh, the sixth a little shorter than the seventh, but twice as long as the fifth, the petiole as long as the metathorax, not longer than thick, fluted.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Described from one specimen.

Pantoclis flavipes, sp. nov.

♀. Length, 2.5^{mm}. Polished black, pubescent; antennæ and legs bright yellow, the former after the first flagellar joint slightly fuscous; mandibles and clypeus rufous. Antennæ 15-jointed, subfiliform, the first flagellar joint two-thirds the length of the scape, or thrice as long as the pedicel, the joints beyond to the seventh subequal, beyond short, not, or scarcely, longer than thick. Metathorax carinated. Tegulae yellow. Wings subhyaline, the venation brown, the marginal cell 4 times as long as the marginal vein, the latter slightly shorter than the oblique

first branch of the radius. Abdomen black, pubescent beneath and at tip, the second segment rufous toward base, both above and beneath, the petiole shorter than the metathorax, not longer than thick, striated, segments third, fourth, fifth, and sixth short, equal, seventh twice as long as the sixth and a little longer than the eighth.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

***Pantoclis coloradensis* Ashm.**

Zelotypa coloradensis Ashm., Bull. No. 1, Col. Biol. Assoc., p. 12.

♀. Length, 3^{mm}. Subrobust, polished black, pubescent. Face with a deep impression just above the clypeus. Eyes pubescent. Antennæ brownish-yellow, the flagellum fuscous; the scape is nearly twice as long as the first flagellar joint; pedicel globular; first flagellar excised for one-third its length basally; the following joints shorter, about thrice as long as thick. Thorax with 2 furrows, converging posteriorly; mesopleura impressed across the disk; scutellum convex, with a deep fovea across the base; metathorax short, carinated. Legs brownish-yellow, the posterior coxæ dusky at base. Wings hyaline, pubescent, the venation pale brown; the marginal vein is only one-third the length of the marginal cell, the first branch of the radius about as long as the marginal, oblique.

HABITAT.—West Cliff, Colo.

Type in Coll. Ashmead.

Described from one specimen received from T. D. A. Cockerell.

***Pantoclis californica*, sp. nov.**

(Pl. xv, Fig. 2a, ♂ antenna.)

♂ ♀. Length, 2 to 2.2^{mm}. Polished black; antennæ, mandibles, tegulæ, and legs rufous, the former dusky toward tips. Antennæ in ♀ 15-jointed, clavate, moniliform, the first flagellar joint twice as long as the pedicel, the joints beyond moniliform, after the fourth, transverse-moniliform; in ♂ 14-jointed, filiform, pale brownish; the first flagellar joint about as long as the scape, excised at base, the joints beyond very gradually shortening, the penultimate a little shorter than the last, 2½ times as long as thick. Metathorax carinated, the posterior angles projecting. Wings subfuscous; the marginal cell about thrice as long as the marginal vein, the latter two-thirds the length of the oblique first branch of the radius. Abdomen conic-ovate, polished black; the petiole as long as the metathorax, fluted; segments third, fourth, and fifth, very short, equal; sixth a little longer; seventh and eighth about equal, slightly more than twice as long as the sixth; the eighth rufous.

HABITAT.—Santa Cruz Mountains, California.

Types in Coll. Ashmead.

Described from 1 ♂, 2 ♀ specimens. Comes near to *P. montana*, but in that species the antennæ and hind legs are black, the seventh abdominal segment is a little longer than the eighth, and the latter is black, not rufous.

Pantoclis rufescens, sp. nov.

♀. Length, 3^{mm}. Entirely brownish-piceous; antennæ and legs, brownish-yellow. Antennæ 15-jointed, subfiliform-moniliform; the first flagellar joint twice as long as the pedicel, the joints beyond moniliform; after the third transverse-moniliform, the last one-third longer than the penultimate. Metathorax short, carinated, the posterior angles slightly prominent. Wings subfuscous, the marginal cell $2\frac{1}{2}$ times as long as the marginal vein, the latter slightly shorter than the oblique first branch of the radius. Abdomen conic-ovate, the petiole $1\frac{1}{2}$ times as long as thick, fluted; the segments, 3, 4, and 5 short, equal; the sixth a little longer, the seventh thrice as long as the sixth and a little shorter than the eighth.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen.

Pantoclis floridana, sp. nov.

♀. Length, 2.5^{mm}. Polished black, pubescent; antennæ, mandibles, tegulæ, and legs brownish-yellow, the former dusky toward tips. Antennæ 15-jointed, filiform-moniliform; the first flagellar joint slightly more than twice as long as the pedicel; the joints after the third equal, moniliform. Metathorax with 5 keels, the posterior angles not prominent. Wings subfuscous, the marginal cell thrice as long as the short marginal vein, the latter shorter than the oblique first branch of the radius. Abdomen oval; the petiole about $1\frac{1}{2}$ times as long as thick, striated; the segments 3, 4, 5, and 6 very short, about equal; the seventh longer, rufous.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

ZYGOTA Förster.

Hym. Stud., II, p. 131 (1856).

(Type *Belyta abdominalis* Nees.)

Head transverse or subglobose; the occiput straight, delicately margined behind; ocelli 3, arranged in a curved line, or subtriangularly arranged; eyes oval, hairy.

Antennæ inserted on a frontal prominence; in ♂ 14-jointed, filiform; the scape rather short, extending scarcely beyond the ocelli; the first flagellar joint as long, or nearly as long, as the scape, deeply excised at base; in ♀ 15-jointed, thickened toward tips; the scape long

and stout, reaching beyond the ocelli; the first flagellar joint obconic, longer than the pedicel; the following joints transverse, submoniliform or perfoliated; the last ovate, conical, or oblong.

Maxillary palpi with joints 2 and 3 dilated.

Thorax as in *Zelotypa*, the posterior angles of metathorax prominent, acute, or toothed.

Front wings pubescent, with a basal cell and a very long, lanceolate marginal cell, which is usually open at tip; the marginal vein is short, not or scarcely longer than the stigmal or the first abscissa of the radius.

Abdomen ovate, slightly pointed at tip; the petiole usually stout, a little longer than thick, fluted.

Legs similar to *Pantoclis*, but the anterior tibiæ in the ♂ is twisted and armed at the middle with a spine or tooth.

TABLE OF SPECIES.

MALES.

Marginal cell not especially long, closed; the first branch of radius oblique; antennæ dark fuscous.....Z. CALIFORNICA, sp. nov.
Marginal cell long, open; the first branch of radius straight.....Z. AMERICANA Ashm.

FEMALES.

First flagellar joint not twice as long as the pedicel.....Z. AMERICANA Ashm.
First flagellar joint about twice as long as the pedicel.....Z. TEXANA, sp. nov.

Zygota californica, sp. nov.

♂. Length, 3.5^{mm}. Black, shining, covered with a fuscous pubescence. Antennæ 14-jointed, brown-black, extending to the middle of the abdomen; the first flagellar joint slightly shorter than the scape, strongly excised at base; the joints beyond from 3½ to 4 times as long as thick, the last a little longer than the penultimate. Metathorax smooth, shining between the central and lateral carinæ. Tegulæ rufo-piceous. Wings subfuscous, the venation piceous; the marginal vein is slightly longer than the oblique first branch of the radius, the marginal cell closed.

Legs brownish-yellow, the hind coxæ slightly dusky basally, the anterior tibiæ with a strong spine at about two-thirds its length. Abdomen black, polished, with a greyish pubescence beneath; the petiole twice as long as the metathorax.

HABITAT.—Placer County, Cal.

Type in National Museum.

Described from a single specimen collected by Mr. A. Koebele, in September.

Zygota americana Ashm.

(Pl. xv, Fig. 3, ♂.)

Can. Ent., xx, p. 54.

♂ ♀. Length, 3 to 3.5^{mm}. Polished black, covered with a fuscous pubescence. Antennæ 15-jointed, filiform-moniliform; the first flagel-

lar joint not twice as long as the pedicel, the three following joints nearly round, the remaining to the last, transverse-moniliform, subpedicellate, the last cone-shaped. Mesonotal furrows broad, distinct. Scutellum with a deep depression at base. Metathorax carinated. Legs, including coxæ, honey-yellow, the first joint of anterior tarsi long, deeply emarginate at base. Wings fusco-hyaline, pubescent, the venation brown, the marginal cell very long, not quite closed, the marginal vein very little longer than the first abscissa of radius. Abdomen ovate, black, slightly rufous basally, the venter densely pubescent, the petiole scarcely twice as long as wide, fluted.

The ♂ antennæ are 14-jointed, long, filiform, pubescent, the pedicel rounded, the first flagellar joint about 5 times as long as thick, excised basally, the following joints shorter. The anterior tibiæ is twisted and produced outwardly into a strong tooth or spine, the apical spine long, curved.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Zygota texana, sp. nov.

♀. Length, 3^{mm}. Black, shining, somewhat densely covered with a fine fuscous pubescence; the apex of the seventh dorsal abdominal segment and the last ventral segment, rufous; antennæ rufous; tegulæ and legs brownish-yellow; palpi and mandibles pale.

Antennæ 15-jointed, moniliform, the first flagellar joint about twice as long as the pedicel, the last oblong, the five preceding transverse-moniliform. Wings subfuscous, the venation brown, the marginal cell very long, more than 5 times as long as the marginal vein, the latter scarcely longer than the first abscissa of radius, the latter almost straight. Metathorax carinated. Abdomen about as long as the head and thorax together, the petiole along the sides and at apex, and the venter, densely pubescent, the second segment laterally very finely punctate.

HABITAT.—Texas.

Type in Coll. Ashmead.

ACLISTA Förster.

Hym. Stud., II, p. 128 (1856).

Head globose or subglobose, the cheeks usually full; ocelli 3, small, in a triangle, not prominent; eyes rounded, pubescent.

Antennæ inserted usually on a very prominent frontal projection; in ♀ 15-jointed, incrassated or clavate-moniliform; scape stout, reaching far above the ocelli; pedicel smaller than the first flagellar joint, the latter usually only a little longer than thick; the following joints all moniliform or transverse-submoniliform, sometimes slightly pedicellate; in ♂ long, filiform, 14-jointed, covered with a short, dense pubes-

cence, the scape reaching beyond the ocelli, the pedicel small, annular, or rounded, the first flagellar joint lengthened, excised one-third its length at base, the following joints shorter, the terminal joint usually shorter than the second.

Mandibles short, arcuated.

Thorax subovoid, the pronotum distinctly visible from above, sometimes lengthened, narrowed before; mesonotum with 2 deep furrows; scutellum subconvex or flattened, with a large fovea at base; metathorax short, carinated, the posterior angles prominent or acute.

Front wings pubescent, with a distinct basal cell and a short, open marginal cell; the marginal vein is usually very short; the first branch of radius short, oblique, with a slight uncus from the tip; ♀ sometimes apterous or subapterous.

Abdomen ovate or conic, the petiole longer than thick, a little swollen in the middle.

Legs pubescent or pilose, the femora clavate, the tibiæ clavate or subclavate, tibial spurs short but distinct, the basal joint of hind tarsi 3 or more times longer than the second.

TABLE OF SPECIES.

- Species black, or at least not entirely rufous or brownish..... 2
Species entirely brownish or rufous.
- Antennæ and legs pale brownish-yellow, the former incrassated toward tips, the first flagellar joint not longer than the pedicel but much slenderer, the joints beyond moniliform, gradually increasing in size.
- Three terminal joints pale; pedicel much stouter but not longer than the first flagellar joint *A. RUFA*, sp. nov.
- Three terminal joints black; pedicel stouter and distinctly longer than the first flagellar joint *A. RUFESCENS*, sp. nov.
2. Abdomen entirely black or only slightly pale at tip 3
Abdomen brownish or rufous, or at least toward the base.
- Antennæ incrassated toward tips, moniliform, the first flagellar joint longer than the pedicel.
- Metathorax, petiole, and abdomen rufous, the second segment piceous ♀ (♂ abdomen except the petiole black)..... *A. RUFOPETIOLATA*, sp. nov.
- Metathorax always black, the second abdominal segment alone rufous.
- Antennæ and legs pale brownish-yellow, the first flagellar joint as long as the scape, excised basally for two-thirds its length ♀.
- *A. MISSOURIENSIS*, sp. nov.
3. Antennæ and legs rufous or brownish-yellow.
- Antennæ incrassated toward tips, sub-moniliform.
- First flagellar joint not longer than the pedicel but slenderer... *A. CONICA*, sp. nov.
- First flagellar joint a little longer than the pedicel and as thick, the following joints transverse-moniliform.
- Abdomen bluntly rounded at tip, the petiole stout, rugose.
- *A. RUGOSOPETIOLATA*, sp. nov.
- Antennæ filiform-moniliform.
- First flagellar joint twice the length of the pedicel; the joints after the fourth transverse, the last conical, twice as long as the penultimate.
- Abdomen oblong-oval..... *A. CALIFORNICA*, sp. nov.

First flagellar joint one-third longer than the pedicel, the joints beyond the third moniliform, equal, not wider than long, the last one-third longer than the penultimate.

Abdomen pointed ovate.....A. BOREALIS, sp. nov.

Antennæ filiform, the joints long, cylindrical.

First flagellar joint one-third longer than the pedicel, excised at base, the joints beyond subequal, the penultimate at least thrice as long as thick.

A. FLORIDANA, sp. nov.

***Aolista rufa*, sp. nov.**

♀. Length, 2.5^{mm}. Rufo-piceous, the head dusky or blackish; antennæ and legs brownish yellow. Antennæ 15-jointed, clavate-moniliform, the first flagellar joint slender, not quite as long as the pedicel, which is much stouter, the joints beyond all moniliform and much enlarged after the seventh, the last oblong. Wings subhyaline, the marginal cell entirely wanting, the marginal vein about twice as long as thick, the stigmal represented only by a stump of a vein. Abdomen long, conic-ovate, the petiole short, not longer than thick, almost smooth, the seventh segment as long as the fourth, fifth, and sixth united and slightly longer than the eighth.

HABITAT.—Texas.

Type in Coll. Ashmead.

***Aolista rufescens*, sp. nov.**

♀. Length, 3^{mm}. Dark brownish piceous, the head almost black; antennæ and legs brownish-yellow, the three or four terminal joints of the antennæ black.

It is close to *rufa*, but differs in having longer and more slender antennæ, the scape longer and slenderer, the pedicel longer than the first flagellar joint, while the flagellum is longer, the joints towards apex not so large or transverse, the four or five terminal joints being black; the marginal cell is entirely wanting, the marginal vein being punctiform, not longer than thick; the abdomen is longer, stouter, and more pointed, the seventh and eighth segments being equal.

HABITAT.—Santa Cruz Mountains, California.

Type in Coll. Ashmead.

Described from a single specimen.

***Aolista rufopetiolata*, sp. nov.**

(Pl. xv, Fig. 4, ♀.)

♀. Length, 2.5^{mm}. Black, shining, pubescent, the metathorax petiole apex of abdomen rufous, basal joint of antennæ and legs pale rufous.

Antennæ 15-jointed, clavate-moniliform, the first flagellar joint is twice as long as the pedicel, the joints beyond shorter, all moniliform.

Wings fuscous, the marginal cell open, the marginal vein half the length of the first branch of the radius being only a little longer than thick, the second branch of radius not developed. Abdomen pointed

ovate, the petiole stout, not longer than thick, fluted, the sixth and seventh segments about equal, the eighth shorter.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Aclista missouriensis, sp. nov.

♂. Length, 2.8^{mm}. Polished black, sparsely pubescent; antennæ, tegulæ, and legs brownish-yellow. Antennæ 14-jointed, rather stout, cylindrical, the first flagellar joint as long as the scape, the basal two-thirds excised, the following joints very slightly shortened, about thrice as long as thick. Metathorax carinated. Wings subhyaline, the marginal cell partially present, the marginal vein thrice as long as thick, the first branch of radius oblique and short, the second branch of the radius present being two-thirds the length of the marginal. Abdomen black, the second segment toward the base more or less rufous, the petiole stout, as long as the metathorax, rugose, with a furrow along the sides.

HABITAT.—St. Louis, Mo.

Type in Coll. Ashmead.

Aclista conica, sp. nov.

♀. Length, 2^{mm}. Polished black, nearly devoid of pubescence; antennæ and legs rufous. Antennæ 15-jointed, clavate-moniliform, the first flagellar joint much more slender but not longer than the pedicel, the joints beyond sub-moniliform, transverse after the third, the terminal joint oval, longer than the penultimate. Metathorax carinated.

Wings subhyaline, the marginal cell entirely wanting, the marginal vein more than thrice as long as thick, the first branch of radius short. Abdomen conic-ovate, the petiole short, not longer than thick, with faint raised lines but not distinctly fluted, the sixth and seventh segments about equal, longer than the preceding segment.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Aclista rugosopetiolata, sp. nov.

♀. Length, 2.6^{mm}. Polished black, pubescent; the thorax rather flat, the scutellum with two foveæ at base connected by a grooved line. Antennæ 15-jointed, very stout and incrassated, the scape nearly half the length of the flagellum, the first flagellar joint a little longer than the pedicel and as stout, the remaining joints all transverse-moniliform, the last oval. Metathorax rugose, carinated.

Wings subhyaline, the marginal vein about thrice as long as thick, the stigmal vein short, oblique, ending in a hook. Abdomen long-oval, pilose toward tip and beneath, the petiole stout, longer than thick, rugose and opaque, with a channel along the sides.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

Aclista californica, sp. nov.

♀. Length, 2.5^{mm}. Polished black, pubescent; antennæ black, the basal 5 joints rufous; legs rufous, the hind coxæ black basally. Antennæ 15-jointed, moniliform, the first flagellar joint twice the length of the pedicel, the second shorter than the pedicel, the joints beyond moniliform. Metathorax carinated, very pubescent. Wings subfuscous, the marginal vein about twice as long as thick, the stigmal short oblique with a hook at tip (all that remains of the radius.) Abdomen oblong-oval, black, the tip and beneath sparsely pubescent, the petiole as long as the metathorax, strongly fluted.

HABITAT.—Santa Cruz Mountains, California.

Type in Coll. Ashmead.

Described from a single specimen.

Aclista borealis, sp. nov.

♀. Length, 2.6^{mm}. Polished black, pubescent; antennæ and legs brownish-yellow. Antennæ 15-jointed, filiform-moniliform, the first flagellar joint one-third longer than the pedicel, the joints beyond the third, except the last, all of an equal size, moniliform, very slightly wider than long, the last one-third longer than the penultimate. Wings subfuscous, the marginal vein about as long as the stigmal, the latter oblique with a slight branch at tip. Abdomen pointed, ovate, black, shining and pubescent, the petiole as long as the metathorax, strongly fluted.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen.

Aclista floridana, sp. nov.

♂. Length, 2.6^{mm}. Polished black, pubescent; antennæ and legs brownish-yellow. Antennæ 14-jointed, setaceous, the first flagellar joint a little longer than the scape, excised at base, the following joints gradually subequal to the last, the penultimate joint being about thrice as long as thick and shorter than the last. Metathorax smooth, shining, carinated, the central carina forked from the middle. Wings subfuscous, the marginal vein a little longer than the oblique stigmal, the radius (or second branch) partially developed, as long as the stigmal, and forming an open marginal cell. Abdomen oblong-oval, black, shining, the tip and beneath with whitish pile, the petiole 1½ times as long as thick, delicately keeled above with a deep channel along the sides, the seventh and eighth segments of an equal length, longer than the sixth.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

PSILOMMA Förster.

Hym. Stnd., II, p. 132 (1856).

Opazon Hal., Nat. Hist. Rev., IV, p. 170 (1857).

Head subglobose, the occiput rounded, the ocelli 3 in a triangle; eyes oval, bare.

Antennæ in ♀ incrassated toward tips, submoniliform, the scape long, the pedicel shorter than the first flagellar joint, the joints beyond transverse-moniliform, the last oblong; in ♂ 14-jointed, filiform, the pedicel rounded, the first flagellar joint elongate, cylindric, the second shorter, slightly excised outwardly at base, the joints beyond to the last short, scarcely twice as long as thick, the last fusiform, longer than the penultimate.

Mandibles short, pointed, but bifid at tips.

Thorax subovoid, the pronotum anteriorly produced into a slight neck; mesonotum with two furrows; scutellum convex, with a profound fovea at base and a transverse, punctate line before the apex; postscutellum flat, rugose; metathorax carinated.

Front wings pubescent, fringed, the marginal vein punctiform, the stigmal short, with a long radius from its tip, forming a long, lanceolate marginal cell, which is open at tip.

Abdomen conic-ovate, subdepressed, the petiole long.

Legs long, the femora swollen, clavate, the tibiæ subclavate, the tarsi shorter than their tibiæ (except the anterior pair), the basal joint short, not twice as long as the second.

Förster indicated no type.

Psilomma columbianum, sp. nov.

(Pl. xv, Fig. 5, ♀; a, ♂ antenna.)

♂ ♀. Length, 3.6 to 4^{mm}. Polished black; antennæ and legs rufous; tegulæ yellow. Antennæ in ♀ 15-jointed, clavate-submoniliform, the first flagellar joint a little longer than the pedicel, the following to the last transverse-submoniliform, the last the stoutest, conic; in ♂ 14-jointed, filiform, the pedicel small, round, the first flagellar joint the longest, about 3½ times as long as the pedicel, the second slightly shorter, the remaining cup-shaped, loosely articulated. Thorax narrowed before, with two broad furrows, the scutellum foveated at base, the metathorax subquadrate, rugose. Wings subfuscous, the marginal vein punctiform, the first branch of radius very short, the second branch visible as a long fuscous streak, forming a very long, lanceolate, open marginal cell. Abdomen conic-ovate, pilose beneath and toward tip, black, smooth, and shining; the petiole long, finely roughened, with a channel at the sides, the anal segment punctate.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead and National Museum.

Described from 1 ♀ and 2 ♂ specimens.

ISMARUS Haliday.

Nat. Hist. Rev., IV, p. 169 (1857).

Entomius H. Schf., Nom. Ent., II.(Type *I. dorsiger* Curtis.)

Head transverse, much wider than the thorax, the occiput rounded; ocelli 3, triangularly arranged; eyes rounded, bare.

Antennæ in ♀ 15-jointed, submoniliform; in ♂ 14-jointed, filiform, the fourth joint excised at base.

Maxillary palpi 4-jointed; labial palpi 3-jointed.

Mandibles short, arcuate, bidentate.

Thorax subovate, the pronotum visible from above, the anterior angles straight; mesonotum without furrows; scutellum convex, margined at sides and with a fovea at base; metathorax short, rugulose, the angles unarmed.

Front wings pubescent, with a small, triangular, closed marginal cell and a basal cell; the marginal vein is longer than the marginal cell.

Abdomen ovate or oval, the petiole short, only a little longer than thick, the second segment large, occupying about half of the remaining surface, with a median sulcus at base, the following segments short, about equal.

Legs moderate, pilose or pubescent, the hind tarsi not longer than their tibiae, the basal joint three times as long as the second.

This genus is not found in our fauna. On Pl. xv, Fig. 6, I figure the male of *Ismarus rugulosus* Först., to give our students some idea of the genus.

ANOMMATIUM Förster.

Hym. Stud., II, pp. 130 et 140 (1856).

Head subglobose, without ocelli; the eyes rounded, pubescent.

Antennæ inserted on a frontal prominence, in ♀ 14-jointed, incrassated toward tips, the last joint strongly developed, nearly round, and much thicker than the penultimate.

Thorax as in *Aclista*.

Wings entirely wanting.

Abdomen ovate or conic, the petiole a little longer than thick.

Legs of moderate length, the femora clavate, the tarsi not especially long, joints 2 to 4 gradually subequal, the last joint as long as the two preceding; claws stout.

The type of this genus is not mentioned by Förster and the genus is not yet recognized in our fauna.

ANECTATA Förster.

Hym. Stud., II, p. 130 (1856).

Head transverse or subglobose; ocelli 3, close together, in a triangle; eyes oval, pubescent.

Antennæ inserted on a frontal prominence, 14-jointed, filiform in both sexes, or in ♀ sometimes slightly incrassated toward tips, the joints, for the most part, moniliform or submoniliform, the last conic or ovate; in the ♂ the joints are cylindrical, the first flagellar joint the longest and usually excised at base.

Thorax as in *Cinetus*.

Wings pubescent, with a basal cell and a closed marginal cell, the stigmal vein usually oblique (rarely straight), the marginal vein very short, seldom much longer than the stigmal.

Abdomen obovate or conic, the petiole two or three times as long as thick, the second segment with a longitudinal sulcus at base.

Legs as in *Aclista*, the basal joint of hind tarsi less than three times as long as the second; tibial spurs short, but distinct.

No type seems to have been described or indicated by Förster, but the genus is a valid one, readily distinguished by the 14-jointed antennæ in female, and the closed marginal cell.

Only two other genera have 14-jointed antennæ in the ♀, viz, *Anommatus* and *Pantolyta*; the former is wingless and without ocelli, the latter winged but without a marginal cell.

TABLE OF SPECIES.

- All coxæ pale 2
 Hind coxæ black; legs reddish-yellow.
 Antennæ clavate-moniliform, black, the tip of scape and pedicel rufous, ♀.
 Marginal cell not twice as long as the marginal vein. A. CALIFORNICA, sp. nov.
 Antennæ filiform, fuscous, base and tip of scape, pedicel, and base of first flagellar joint yellowish, ♂.
 Marginal cell more than twice as long as the marginal vein.
 A. POLITA, sp. nov.
2. Antennæ rufous, fuscous toward tips.
 Antennæ filiform, submoniliform, the first flagellar joint thrice as long as the pedicel, the following subequal, the three preceding the last moniliform, ♀.
 Marginal cell twice as long as the marginal vein. A. HIRTIFRONS Ashm.
 Antennæ setaceous, fuscous, yellowish basally, the first flagellar joint a little shorter than the scape, excised at base, the joints beyond gradually shortening, the penultimate $2\frac{1}{2}$ times as long as thick, ♂.
 Marginal cell more than twice as long as the marginal vein.
 A. GEORGICA, sp. nov.

Anectata californica, sp. nov.

♀. Length, 2^{mm}. Polished black; tip of scape, pedicel and legs, rufous or reddish-yellow. Antennæ 14-jointed, gradually incrassated toward tips, moniliform; the pedicel and first flagellar joint of an equal length; the joints beyond to fifth subequal; joints 5 to 8 rounded; 8 to 11 transverse-moniliform; the last cone-shaped, twice as long as the penultimate. Wings subhyaline, the venation brown, the marginal cell less than twice as long as the marginal vein; the first branch of radius oblique, about half the length of the marginal. Metathorax carinated.

Abdomen shining black, impunctured, with some sparse pile toward the apex and beneath; the petiole slightly longer than the metathorax, strongly fluted.

HABITAT.—Santa Cruz Mountains, California.

Type in Coll. Ashmead.

Anectata polita, sp. nov.

♂. Length, 3^{mm}. Polished black, pubescent; antennæ fuscous, tip of scape, pedicel, and base of first flagellar joint yellowish; legs brownish-yellow; the middle and posterior coxæ black basally; mandibles rufous.

Antennæ broken off at tips, the scape a little longer than the pedicel and first funicular joint together, the first funicular joint more than one-third longer than the second, excised at basal half.

Wings hyaline, the marginal cell more than twice as long as the marginal vein; the first branch of radius nearly straight, one-third shorter than the marginal. Abdomen as long as the head and thorax together; the petiole strongly fluted, a little longer than the metathorax, the second ventral segment with distinct punctures toward the base.

HABITAT.—West Cliff, Colo.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. T. D. A. Cockrell.

Anectata hirtifrons Ashm.

(Pl. xv, Fig. 8, ♀.)

Can. Ent., XIX, p. 198.

♀. Length, 3^{mm}. Black, shining, pubescent; the face with rather dense whitish pubescence; antennæ rufous, a little dusky at tips; legs pale rufous or brownish-yellow. Antennæ subfiliform, 14-jointed; scape slightly bent, nearly thrice as long as the first flagellar joint; pedicel not longer than thick; first flagellar joint a little longer than the second, the following gradually shortened to eighth, the three preceding the last very slightly wider than long, the last oblong. Wings hyaline, the pubescence fuscous, the marginal vein one-half the length of the marginal cell, the first branch of the radius straight, one-half shorter than the marginal vein. Abdomen a little shorter than the head and thorax together, with the tip turned upward, covered beneath and at apex with a whitish pubescence; petiole as long as the metathorax, strongly fluted.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

The only specimen I possess or have seen of this species was received some years ago from Mr. W. Hague Harrington.

Anectata georgica, sp. nov.

♂. Length, 3½^{mm}. Polished black, with a sparse white pile; antennæ rufous; legs and tegulæ brownish-yellow. Antennæ 15-jointed,

long, setaceous; the first flagellar joint nearly as long as the scape, strongly excised at base; the joints beyond shorter, very gradually shortened; the penultimate joint thrice as long as thick, the last slightly longer. Metathorax smooth, shining, carinated. Wings subhyaline, the venation pale brown, the marginal cell $2\frac{1}{2}$ times as long as the marginal vein, the first branch of the radius very oblique, a little shorter than the marginal vein. Abdomen black, polished, pilose; the petiole longer than the metathorax or a little more than twice as long as thick, strongly fluted.

HABITAT.—Georgia.

Type in Coll. Ashmead.

PANTOLYTA Förster.

Hym. Stud., II, p. 130 (1856).

(Type *Belyta heterocera* Hal.)

Head subglobose, the face produced into a ledge for the insertion of antennæ; ocelli minute; eyes rounded.

Antennæ inserted on a frontal prominence; in ♀ 14-jointed submoniliform; the pedicel larger and stouter than the first flagellar joint; in ♂, filiform.

Maxillary palpi, 5-jointed; labial palpi, 3-jointed.

Mandibles bifid at tips, subrostriform.

Thorax as in *Anectata*.

Front wings pubescent, with a distinct basal cell, but without a marginal cell; the marginal vein variable, punctiform, or as long as the basal nervure.

The radius always short, but slightly developed.

Abdomen conic-ovate, the petiole short.

Legs as in *Anectata*, the femora and tibiæ clavate, pilose.

This genus very closely resembles *Polypeza* Förster in the *Diapriinæ*, but that genus has no basal cell in the hind wings.

The following species is the only one as yet detected in our fauna:

Pantolyta brunnea, sp. nov.

(Pl. XVI, Fig. 1, ♀.)

♀. Length, 2^{mm}. Light brown to brownish-yellow; antennæ and legs pale brownish-yellow; eyes dark brown, rounded. Head globose, the face with a prominent frontal ledge for the insertion of antennæ, the occiput rounded; mandibles subrostriform, conical, bifid at tips. Antennæ four-fifths the length of the body, clavate, gradually incrassated towards tips, pubescent, the joints, after the sixth, moniliform; scape long, cylindrical, slightly bent, and nearly half the length of the flagellum, the apical margin beneath produced into a minute spine; pedicel oblong, stout; first funicular joint the slenderest and longest joint, obconical, about three times as long as thick at tip; second funicular joint about two-thirds the length of the first; the third still

shorter but stouter; all joints beyond moniliform, gradually increasing in size. Thorax subovate, smooth, shining, trapezoidally narrowed anteriorly from the tegulae; mesonotum about as long as wide across the base, the parapsidal furrows being distinct, the middle lobe at base being one-third shorter than at apex; scutellum deeply foveated at base; postscutellum short with a median carina; metanotum as long as the scutellum, areolated. Wings hyaline, covered with a long pubescence, the venation pale; the marginal vein is as long as the basal; the postmarginal not at all developed; the radial vein small, the first abscissa being scarcely twice as long as thick, while the second abscissa is much longer, and extends forward parallel with the outer margin of the wing, leaving very little space, so that there is scarcely any trace of the marginal cell. Legs pilose, the femora and tibiae strongly clavate. Abdomen conic-ovate, the tip conically pointed and curving downwards; petiole scarcely twice as long as thick.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

It bears a close resemblance to *Polypeza Pergandei*, and without a careful examination for the cell in the hind wing could easily be confused with that species.

Subfamily X.—DIAPRIINÆ.

Head globose or subglobose, rarely oblong. Ocelli 3, close together, and triangularly arranged. Mandibles most frequently short, obtuse, bidentate at apex, rarely rostriform. Maxillary palpi 4- or 5-jointed; labial palpi 2-jointed. Antennae porrect, inserted on a frontal prominence, in males 13- or 14-jointed, filiform, nodose verticillate or moniliform; in females 12- or 13-jointed, and in a single case 14-jointed, clavate. Pronotum scarcely visible from above; mesonotum rarely longer than wide, and with or without furrows; scutellum most frequently convex, and foveated at base; metathorax short, emarginate. Front wings strongly fringed, most frequently without distinct cellules, the marginal nervure punctiform or wanting; hind wings never with a basal cell, veinless. Apterous forms frequent. Abdomen subpetiolate, rarely with a very long petiole, ovate, conic-ovate, or oblong-oval, composed of 7 or 8 segments, the second always large. Legs clavate, the tibial spurs 1, 2, 2, the middle and posterior pairs usually weak; tarsi long, slender, 5-jointed, claws simple.

This subfamily could only be confounded with the *Belytinæ*, but the 2-jointed labial palpi, the absence of a cell in the hind wings, and the less distinctly veined front wings readily separate it. The habitus, except in a few genera, is also quite different; the frontal prominence is rarely so distinct, the antennae in the female are shorter, more distinctly clavate, the venation in front wings quite different, while the abdomen is, as a rule, less distinctly pointed, and most frequently with a much shorter petiole.

The only genera, probably, that would give the student trouble in placing, are *Synacra* and *Polypeza*. The first mentioned was originally placed by Förster in the *Belytinæ*, as the venation is more strongly developed than in any other Diapriid, and the abdomen is shaped as in many of the Belytids, but there is *no basal cell in the hind wings*.

Loboscelida Westw., Thes. Ent. Oxon., p. 171, is not included in the table of genera, as I believe it to be a Cynipid genus.

While comparatively little is yet known of the habits of the greater number of the *Diaprinæ*, from such as have been reared we are justified in stating the group is parasitic only on Dipterous larvæ, as all carefully bred specimens, both in Europe and America, have been reared only from these insects. *Diapria melanocorypha* Ratz. is recorded as having been bred from *Cryptorhynchus lapathi*, and *Entomacis cordipennis* Förster from a spider's nest; but we know now that various Diptera are found in the burrows of Rhynchophora and other wood-boring Coleoptera and that certain Diptera, *Leucopis*, etc., are parasites of spiders, and it is safe to infer that these Diapriids came from Dipterous parasites overlooked by Ratzeburg and Förster.

The group may be divided conveniently into two tribes, as follows:

Submarginal vein reaching the costa at about half the length of the wing or a little before; if it does not reach the costa it attains nearly half the length of wing and ends in a stigma; costal cell most frequently closed.

Tribe I—SPILOMICRINI

Submarginal vein never reaching the costa beyond one-third the length of the wing; costal cell most frequently open, or the subcostal and costal nervures are confluent Tribe II—DIAPRIINI

Tribe I—SPILOMICRINI.

The longer submarginal vein, that almost invariably reaches the costa at about half its length, and the closed (rarely open) costal cell can be depended upon to distinguish the genera in this tribe; it is only in two genera, *Aneurhynchus* and *Labolips*, that the submarginal vein does not reach the costa, but even in these genera it is long and terminates in a stigma.

The genera are not numerous and may be synoptically represented as follows:

TABLE OF GENERA.

FEMALES.

- | | |
|---|-------------------|
| 1. Antennæ 14-jointed; mesonotum with 2 furrows | POLYPEZA Förster |
| Antennæ 12-jointed..... | 3 |
| Antennæ 13-jointed. | |
| Mesonotum without furrows (rarely slightly developed posteriorly) | 2 |
| Mesonotum with 2 distinct furrows. | |
| Metathorax armed with a long curved spine at base | HOPLOPRIA Ashm. |
| Metathorax not armed at base with a curved spine. | |
| Basal nervure absent or subobsolete. | |
| Abdomen rounded or truncate at tip; costal cell open; stigmal vein often with a backward directed branch..... | HEMILEXIS Först. |
| Abdomen conically pointed; costal cell closed; stigmal vein simple. | |
| | PARAMESIUS Westw. |

Basal nervure present.

Abdomen conically pointed, the second segment without sulci at base, overlapping the apex of petiole; marginal nervure distinct; costal cell closed..... *SPILOMICRUS* Westw.

Abdomen rounded or truncate at apex, the second segment with sulci at base; marginal nervure very short; costal cell usually open.

HEMILEXIS Förster

2. Basal nervure wanting; stigmal nervure longer than the marginal.

HEMILEXODES Ashm., gen. nov.

3. Submarginal nervure not attaining the costa, ending in a stigma 5

Submarginal nervure attaining the costa.

Wings with a basal nervure 4

Wings without a basal nervure.

Mesonotum with 2 furrows.

Club 5-jointed *SYNACRA* Förster

Club 4-jointed *GLYPTONOTA* Förster

4. Mesonotum without furrows.

Club abrupt, 3-jointed; face keeled at the sides.. *TROPIDOPSIS* Ashm., gen. nov.

Mesonotum with 2 furrows.

Club 5-jointed *IDIOTYPA* Förster

5. Mesonotum with 2 furrows.

Stigma with a stigmal vein; abdomen with 3 sulci at base.

ANEURHYNCHUS Westw.

Stigma without a stigmal vein; abdomen with a single sulcus at base.

LABOLIPS Haliday

MALES.

Antennae 14-jointed 3

Antennae 13-jointed.

Mesonotum without furrows 2

Mesonotum with furrows.

Metathorax armed at base with a curved spine.

Flagellar joints very long, cylindrical..... *HOPLOPRIA*, Ashm., gen. nov.

Metathorax not armed at base with a curved spine.

First flagellar joint not half as long as the second.

Basal vein absent; costal cell closed..... *PARAMESIUS* Westw.

First flagellar joint as long or longer than the second.

Mesonotum not longer than wide.

Costal cell open; basal nervure present.

Stigmal vein much longer than the marginal..... *HEMILEXIS* Förster.

Mesonotum longer than wide.

Costal cell closed; basal nervure present.

Abdomen with sulci at base *IDIOTYPA* Förster.

Abdomen without sulci at base *SPILOMICRUS* Westw.

2. Basal nervure present; costal cell closed.

Base of second segment overlapping the apex of petiole (*SPILOMICRUS*.)

Basal nervure absent; costal cell open or at least open at base.

Flagellar joints long, cylindrical, pilose, the first longer than the second.

HEMILEXODES Ashm., gen. nov.

3. Submarginal vein not reaching the costa, ending in a stigma..... 4

Submarginal vein reaching the costa.

Basal nervure wanting.

Mesonotum with 2 furrows.

Eyes hairy *SYNACRA* Förster.

Mesonotum without furrows.

Flagellar joints elliptic-oval..... *TROPIDOPSIS* Ashm., gen. nov.

4. Stigma with a stigmal vein *ANEURHYNCHUS* Westw.

POLYPEZA Förster.

Hym. Stud., II, p. 123 (1856).

Head globose, rounded before and behind, the occiput not margined; ocelli 3, triangularly arranged; eyes rounded, pubescent.

Antennæ 14-jointed, inserted on a frontal prominence; in ♀ submoniliform, gradually incrassated toward tips; in ♂ filiform, the joints cylindrical.

Mandibles subrostriform, bidentate.

Maxillary palpi 3-jointed; labial palpi 2-jointed.

Thorax ovate, narrowed into a short rounded collar anteriorly; mesonotum with two furrows; scutellum rounded, convex, with a deep fovea at base; metathorax with a central longitudinal carina.

Front wings pubescent, ciliated, the submarginal nervure reaching the costa at about half its length, the marginal nervure distinct, postmarginal and stigmal nervures very minute, scarcely developed; basal nervure distinct.

Abdomen conic-ovate, petiolated, the petiole as long as the metanotum; ovipositor prominent.

Legs clavate, pilose, the tarsi fully as long or longer than the tibiae, 5-jointed, the basal joint of hind tarsi fully 3 times as long as the second.

This genus is the only one in the tribe with 14-jointed antennæ in the ♀ and closely resembles a belytid, without a marginal cell.

Polypeza Pergandei, sp. nov.

(Pl. xvi, Fig. 2, ♀.)

♂ ♀. Length, 1 to 1.2^{mm}. Polished black; metathorax, petiole, and base and tip of abdomen dull rufous, or piceous. Antennæ in ♀ 14-jointed, submoniliform, gradually incrassated toward tips; pedicel longer and thicker than the first flagellar joint; second and third flagellar joints shorter than the first, the joints beyond moniliform; in ♂ 14-jointed, long, filiform, fuscous, the first flagellar joint thrice as long as the pedicel.

Thorax with 2 distinct furrows; scutellum convex, with a deep depression at base; metathorax short, smooth, but bounded by a carina behind. Tegulae yellowish. Wings hyaline, pubescent, very broad, and with a long fringe at the margins; the submarginal vein reaches the costa a little before the middle of the wing; the marginal vein is rather long, linear; stigmal vein short, with an uncus at tip and a slight indication of a backward directed branch; basal cell distinct. Legs honey-yellow, the femora and tibiae slightly infuscated. Abdomen conic-ovate, petiolated; the petiole twice as long as thick, striated; the second segment occupies most of the remaining surface; segments 3 to 6 very short, the seventh conically pointed, longer than segments 3 to 6 united.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Described from four specimens.

This interesting species is dedicated to my friend Mr. Theo. Pergande, to whom I am indebted for two of the four specimens.

HOPLOPRIA Ashm., gen. nov.

(Type *H. pulchripennis* Ashm.)

This genus is founded upon a South American species in the Berlin Museum, and is clearly allied to *Paramesius* Westwood, but differs in having a curved acute spine at the base of the metathorax and in having only 4-jointed maxillary palpi. The joints of the antennæ are also much longer than any other Diapriid genus.

H. pulchripennis, sp. nov.

♂. Length, about 4^{mm}. Black; antennæ, legs, and abdomen ferruginous, the latter dusky at apex. Head opaque, finely shagreened; cheeks, prothorax, metathorax, and the petiole beneath, woolly. Antennæ 13-jointed, longer than the body; the first flagellar joint about as long as the scape, the second very slightly shorter, the following about equal, all cylindrical. Thorax smooth, shining, bisulcate; scutellum with two large deep foveæ at base; metathorax armed at base with a curved acute spine. Wings hyaline, with a large smoky blotch extending from near the base to one-third the length of the wing, having 4 rays; one ray extends to the stigma and another beyond this to the costal margin, and opposite these are the other two which extend to the hind margin; there is also a smoky spot at the apex of the wing.

HABITAT.—Bogota.

Type in Berlin Museum.

HEMILEXIS Förster.

Hym. Stud., II, p. 123 (1856).

Entomacis Först. loc. cit., p. 121.

Glyphidopria Hal. Nat. Hist. Rev., IV, p. 172 (1857).

Head transverse or subglobose, the occiput rounded, the cheeks bare; ocelli 3 small, in a triangle; eyes bare.

Antennæ inserted on a slight frontal prominence, 13-jointed in both sexes; in ♀ submoniliform, incrassated toward tips or clavate; in ♂ filiform, the first and second funicular joints elongate, the second the shorter and thicker, slightly curved, the following oval or oblong-oval.

Maxillary palpi 5-jointed.

Thorax ovoid, the prothorax produced into a little neck anteriorly, scarcely visible from above; mesonotum short, rounded before with two furrows, the furrows sometimes abbreviated anteriorly, but rarely entirely wanting; scutellum with a moderately deep fovea at base; metathorax short, subemarginate, the angles not acute.

Front wings pubescent, strongly ciliated and often emarginate at apex;

the submarginal vein terminates in a short or punctiform marginal vein just before the middle of the wing; and there is a distinct oblique stigmal vein, usually three times as long as the marginal, with sometimes a distinct backward directed branch; the costal cell is open and the basal nervure is present, although faint or subobsolete.

Abdomen long-oval, subtruncate or but slightly pointed at apex. the petiole in the ♀ is usually short, in the ♂ long, woolly, or pubescent; the second segment occupies most of the remaining surface and has sulci at base above.

Legs clavate, pubescent, or pilose, the basal joint of posterior tarsi twice as long as the second.

Dr. Förster erected the genus *Entomacis* upon specimens with a "heart-shaped piece" cut out of the apex of the front wing, but this character in itself will not hold to found a genus, and I have here joined it to *Hemilexis*, as I can find no other character to separate them. I have species with emarginate, slightly emarginate, and entire wings, but in all other essential characters, viz, the 13-jointed antennæ and two furrows on the mesonotum, they agree with *Hemilexis*, so that if I have properly identified these genera they should be united.

Nothing is known of the parasitism of the genus, except what Förster tells us: that he bred specimens of an *Entomacis* from a spider's nest. In all probability the spider was already infested with a Dipterous parasite, *Leucopis* sp., and the Diapriid came from the Dipteran.

Three species are known to me, separated as follows:

Apex of wings more or less emarginated; stigmal vein longer than marginal.

Antennæ yellow, gradually incrassated, moniliform, the last joint large, fusiform, fuscous. ♀.

Legs reddish-yellow; petiole black H. SUBEMARGINATA, sp. nov.

Antennæ subclavate, submoniliform, the flagellum fuscous. ♀.

Legs and petiole, honey-yellow H. MELLIPETIOLATA, Ashm.

Apex of wings entire, stigmal vein more than twice as long as the marginal.

Antennæ filiform, fuscous, the first and second flagellar joints elongate, the second the shorter and produced toward one side at apex, the following joints submoniliform. ♂.

Legs rufous; trochanters, tibiæ, and tarsi yellow H. CALIFORNICA, sp. nov.

Antennæ filiform, brownish-yellow, the second flagellar joint a little longer than the first and third. ♂.

Legs honey-yellow H. SUBEMARGINATA, sp. nov.

Hemilexis subemarginata, sp. nov.

(Pl. XVI, Fig. 4, ♀.)

♀. Length, 1.4^{mm}. Polished black, impunctured; antennæ and legs reddish-yellow. Head subglobose, well rounded before and behind. Mandibles rufous, projecting, bidentate at tips. Antennæ 13-jointed, gradually thickened toward tips, the last joint large, fusiform, larger than the two preceding united; flagellar joints one to four cylindric, subequal, the joints beyond to last moniliform, loosely joined. Thorax

short, rounded before, with two short, abbreviated impressed lines behind, not extending forward to the middle of the mesonotum; scutellum with a transverse fovea at base; metanotum tricarinate, the truncature bounded by a carina above, slightly produced at the lateral angles. Wings hyaline, fringed, slightly emarginated at apex; stigmal nervure oblique, three times as long as the short marginal; basal nervure subobsolete. Abdomen oblong-oval, truncate at apex, polished, shining; the petiole a little longer than thick, finely striated; the extreme base of second segment with some striæ.

The ♂ agrees well with the ♀ except the mesonotal furrows are a little longer, the head larger, antennæ filiform, the second flagellar joint a little longer and stouter than the others, the others about three times as long as thick, while the wing venation is darker, more distinct, the stigmal vein shorter, with a slight backward directed branch from its tip.

HABITAT.—District of Columbia.

Types in Coll. Ashmead.

***Hemilexis mellipetiolata* Ashm.**

Can. Ent., XIX, p. 196; Cres. Syn. Hym., 251.

♀. Length, 1^{mm}. Polished black, impunctured; scape, legs, and abdominal petiole, honey-yellow; flagellum rust-brown. Antennæ 13-jointed, long, gradually incrassated toward tips; flagellar joints 1 to 5 subcylindric, the following submoniliform. Thorax without furrows, scutellum foveated at base; metapleura pubescent. Wings hyaline, strongly fringed, the apex slightly emarginated, the stigma and nervures pale yellow, the stigmal nervure much longer than the short stigma. Abdomen oval, truncate at apex, black, shining, the petiole long, yellow, about three times as long as thick, finely striated.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Quite distinct from the other species in the long yellow petiole, absence of mesonotal furrows, pubescent metapleura and in the relative length of antennal joints.

***Hemilexis californica*, sp. nov.**

♂. Length, 1.5^{mm}. Polished black, impunctate; antennæ brown, the scape and legs yellowish, the hind coxæ and thickened parts of the femora and tibiæ fuscous or piceous. Head more transverse than in the preceding species. Mandibles rufous. Antennæ 13-jointed, filiform, the first flagellar joint long, three times as long as the pedicel, cylindrical, the second stouter and slightly curved and dilated toward apex, the following joints still shorter, loosely joined, from an elliptic-oval to moniliform, the last ovate. Thorax with the parapsidal furrows wanting anteriorly; scutellum with a deep fovea all across the base, metapleura finely rugose. Wings hyaline, fringed, the nervures pale

yellow, the stigmal vein oblique, three times as long as the marginal; basal nervure distinct. Abdomen oblong-oval, truncate posteriorly, the petiole a little more than twice as long as thick, faintly striated.

HABITAT.—Santa Cruz Mountains, California.

Types in Coll. Ashmead.

***Hemilexis brevicornis* Say.**

Psilus brevicornis Say., Lec. Ed. Say, 1, p. 221.

Diapria brevicornis Ashm., Can. Ent., XIX, p. 196; Cress. Syn. Hym., p. 251.

Black, polished, immaculate; tibiæ and tarsi piceous.

Inhabits St. Peters river.

Antennæ short, first joint much elongated, second joint longer than the remaining ones, which are subcylindric-quadrate; mandibles pale, testaceous; thorax convex, rounded, two faint impressed lines each side converging to the scutellum and on the posterior margin two indistinct dull whitish spots; scutellum elevated, convex, feet dark, piceous; thighs nearly black; wings, costal nervure indistinct; abdomen depressed, fusiform, acute at tip. Length more than one-twentieth of an inch. (Say.)

This species is unknown to me, but evidently belongs here.

PARAMESIUS Westwood.

Phil. Mag., 1, p. 129 (1832); Först. Hym. Stud., II, p. 123 (1856).

Cerapsilon Hal. (†)

(Type *P. rufipes* Westw.)

Head transverse, the occiput rounded, the cheeks bare; ocelli 3, distinct in a triangle; eyes oval.

Antennæ inserted on a frontal prominence, 13-jointed in both sexes, in ♀ gradually incrassated toward tips, clavate, the scape reaching far beyond the ocelli, slenderer toward the base; pedicel stouter and longer than the first funicular joint, narrowed basally; first funicular joint only a little longer than thick, a little shorter than the second; seventh to twelfth wider than long, the thirteenth fusiform or ovate, more than twice as large as the preceding; in ♂ longer than the body, filiform, the pedicel and the first funicular joints about equal, the second nearly thrice as long as the first, slightly emarginate at base, the following joints long, cylindrical, four or more times longer than thick.

Maxillary palpi 5-jointed.

Mandibles bifid at tips.

Thorax oblong-oval, narrowed in front, the prothorax transverse, woolly at the sides; mesonotum with 2 distinct furrows; scutellum deeply bifoveated at base, the foveæ often confluent, forming one deep fovea, or separated only by a slight carina; metathorax short, emarginated posteriorly, a short conic keel at base, and with the posterior angles subacute.

Front wings pubescent, ciliated, the costal cell completely closed; the submarginal vein joins the costa at or a little before the middle of the wing; the marginal vein is about thrice as long as thick, with a stump of a stigmal vein; basal vein absent or indistinct.

Abdomen pointed-ovate, the petiole rather long, fluted; the second segment occupies the greater part of its surface, with sulci at base; the apical joint pointed, stylus-like.

Legs rather long, pilose; the femora clavate, the posterior tarsi a little longer than the tibiae, or fully as long, the basal joint one-third longer than the second.

The genus is sufficiently distinct from the other genera with 13-jointed antennæ by the length of the submarginal vein, the absence of a basal nervure, the more pointed abdomen, the second segment with sulci at base, and by the antennal characters of the male.

I am not aware that anything has been published respecting the habits of the genus, but if my memory serves me rightly I saw specimens of *P. rufipes* Westw. in the Berlin Museum, reared from *Eristalis tenax*, along with *Diapria conica*.

Our species seem to be quite distinct from the described European species, and may be recognized by the aid of the following table:

TABLE OF SPECIES.

FEMALES.

Wings subhyaline or tinged with fuscous 2
Wings hyaline.

Antennæ honey-yellow or brownish-yellow, clavate-moniliform.

Flagellum twice as long as the scape, the 5 or 6 terminal joints fuscous or black, the last enlarged, fusiform, more than thrice as large as as the penultimate; legs brownish-yellow; abdomen entirely black *P. PARVULUS*, sp. nov.

Flagellum elongated, the last joint only black, globose-ovate; legs honey-yellow.

Mesonotal furrows complete; abdomen pale at base... *P. TERMINATUS* Say.

Mesonotal furrows wanting; abdomen not pale at base... *P. CLAVIPES* Ashm.

Antennæ fuscous or black.

Flagellum $2\frac{1}{4}$ times as long as the scape, the last joint fusiform, about thrice as large as the penultimate; legs pale reddish, all coxæ black, the femora dusky *P. UTAHENSIS*, sp. nov.

2. Antennæ and legs reddish-yellow.

Last four joints of antennæ black.

Scutellum with two foveæ at base; scapulæ with a grooved line.

P. SPINOSUS, sp. nov.

Scutellum unifovente, the fovea crenulate; scapulæ without a groove.

P. PALLIDIPES, sp. nov.

MALES.

Wings fusco-hyaline.

Legs, including coxæ, pale brownish-yellow; antennæ pale ferruginous.

Pedice and the first funicular joints of an equal length, the joints beyond slightly more than 4 times as long as thick.

P. PALLIDIPES, sp. nov.

Pedice a little shorter but stouter than the first funicular joint, the joints beyond very long, several times longer than thick.

P. SPINOSUS, sp. nov.

Wings dark, fuscous.

Legs ferruginous, all coxæ and the swollen portion of femora black, the tibiae toward apex more or less fuscous; antennæ black, the pedice shorter than the first funicular joint... *P. OREGONENSIS*, sp. nov.

Paramesius parvulus, sp. nov.

♀. Length, 1.5^{mm}. Polished black, impunctured, with some sparse hairs; antennæ, except the five or six terminal joints, and legs, honey-yellow or brownish-yellow; mandibles reddish; palpi white. Antennæ 13-jointed, about as long as the body; the flagellum clavate, twice as long as the scape, the 5 or 6 terminal joints black or blackish, the last joint being very large, fusiform, as long as the three preceding joints united and much stouter; the pedicel is longer and stouter than the first flagellar joint, the joints beyond submoniliform, gradually widening toward tips; the penultimate quadrate. Thorax with two furrows; the scutellum foveated at base and grooved at the sides; posterior margin of prothorax at the sides with a row of punctures, otherwise smooth and polished; metathorax finely rugose, pubescent, with a prominent acute median carina above. Wings clear, hyaline, fringed, the submarginal vein pale yellow, reaching the costa at half the length of the wing; the marginal vein fuscous or brown, twice as long as thick at tip. Abdomen petiolated, conic-ovate, longer than the head and thorax united, polished black, the petiole more than twice as long as thick, coarsely fluted, pubescent beneath, the second segment fully twice as long as the petiole, apex with sparse, long, white hairs.

HABITAT.—District of Columbia and Arlington, Va.

Type in Coll. Ashmead.

Paramesius terminatus Say.

Ptilus terminatus Say, Leconte Ed. Say, II, p. 778.

Paramesius terminatus Ashm., Can. Ent., XIX, p. 196.

Diapria terminata Cr. Syn. Hym., p. 251.

♀. Length, 2.5^{mm}. Polished black, impunctured, sparsely pubescent; antennæ, except toward apex, and legs honey-yellow; petiole obscurely rufous. Antennæ 13-jointed, the pedicel longer than the first flagellar joint, funicular joints 1 to 5 subequal, the first about thrice as long as thick at apex, the fifth scarcely twice as long as thick, the joints from here moniliform, the last fusiform, longer than the two preceding joints united. Thorax with 2 furrows; the scutellum truncate behind, with a quadrate, crenate fovea at base, the mesopleura below with a few longitudinal striæ; metathorax rugulose, pubescent, with a prominent acute carina above. Abdomen conic-ovate, highly polished, the tip pointed, piceous, the petiole about twice as long as thick, striated.

HABITAT.—Bladensburg, Md.

Specimens in Coll. Ashmead.

Paramesius clavipes Ashm.

Can. Ent., XX, p. 53.

♀. Length, 2^{mm}. Polished black, impunctured, covered with some long, sparse hairs on the head, thorax, and surrounding the apex of abdomen; the metathorax and petiole beneath rather densely pubes-

cent; antennæ, except the last joint, and the legs honey—or reddish—yellow. Antennæ 13-jointed, subclavate, the first flagellar joint slightly shorter than the pedicel, the following joints to the fifth subequal, from thence moniliform, loosely joined, the last joint fusiform, more than twice the length of the preceding, fuscous or black. Thorax without furrows, somewhat flat, the sides compressed; collar reddish laterally; mesopleura entirely smooth; metapleura rugose, the mesonotal median keel small. Wings hyaline, pubescent, the venation pale yellow, the marginal nervure short, about twice as long as thick at apex. Legs with the femora strongly clavate, the tarsi very long, the anterior and middle pairs being much longer than their tibiæ. Abdomen pointed or conic-ovate, smooth and polished, the petiole a little longer than thick, strongly fluted, the second segment with two lateral impressions at extreme base.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Paramesius utahensis*, sp. nov.**

♀. Length, 2.6^{mm}. Polished black, impunctured, with a sparse cinereous pubescence. Antennæ two-thirds the length of the body, subclavate, black or fuscous, the basal flagellar joints a little reddish, the pedicel a little thicker but not, or scarcely, longer than the first flagellar joint, flagellar joints 6 to 10 quadrate, the last fusiform, about thrice as long as the penultimate. Thorax with 2 furrows, abbreviated anteriorly, the scutellum truncate behind with a large crenate furrow across the base; mesopleura along the mesopectus longitudinally striate; metapleura rugulose. Wings hyaline, the marginal nervure brown, only twice as long as the short stigmal. Legs pale brown, the coxæ black, the thickened part of the femora piceous, sometimes with the posterior tibiæ fuscous. Abdomen conic-ovate, polished, black, the petiole twice as long as thick, fluted and pubescent beneath.

HABITAT.—Utah Lake, Utah.

Types, two ♀ specimens, in Coll. Ashmead.

Taken by Mr. E. A. Schwarz, in Utah.

***Paramesius spinosus*, sp. nov.**

♀. Length, 3^{mm}. Polished black, impunctured, with a sparse cinereous pile; antennæ, except the 3 terminal joints, and legs, reddish-yellow. Antennæ 13-jointed, about as long as the body, subclavate, pubescent, the scape very long, first flagellar joint a little longer than the pedicel, joints 2 to 5 subequal, the fifth thicker than the preceding joint, the following joints to the last submoniliform, the last fusiform, a little thicker and longer than the two preceding joints together. Thorax with 2 complete furrows, the scutellum truncate at apex with a

grooved line at the sides and bifoveated at base; mesopleura along the mesopectus rugose or coarsely punctate; metapleura rugulose, pubescent, metanotum with an acute triangular keel just behind the postscutellum, the posterior angles acute. Wings subhyaline, pubescent, the marginal nervure at least four times as long as thick at tip, the stigmal vein not longer than wide. Abdomen long, conically pointed, polished, black, the petiole stout, fluted, $2\frac{1}{2}$ times as long as thick, pubescent beneath.

The ♂ measures but 2^{mm} , the antennæ being nearly twice as long as the body, filiform; the pedicel and first funicular joint both short, the latter a little longer, the following joints all very long, cylindrical, several times longer than thick, as long as the scape, the abdomen pear-shaped, the petiole $3\frac{1}{2}$ times as long as thick, fluted.

HABITAT.—Washington, D. C.

Types in Coll. Ashmead.

Described from two specimens. The species is readily distinguished by the bifoveolated scutellum and the rugoso-punctate surface of the lower part of the mesopleura.

Paramesius oregonensis, sp. nov.

♂. Length, 4^{mm} . Polished black, sparsely pilose, the hairs fuscous. Head subglobose, the frontal ridge beneath foveated at the middle; clypeus separated, convex, with a row of punctures at base; mandibles ferruginous, with some golden hairs and several punctures toward base. Antennæ 13-jointed, filiform, longer than the body, black; the pedicel is a little shorter than the first funicular joint; the second funicular joint is the longest joint, fully as long as the pedicel and first joint united, and excised at base, the following joints all long, cylindrical, very slightly shorter than the second. Collar at sides pubescent, mesonotum with 2 furrows, scutellum with a crenate furrow at base, while the metathorax is rugose pubescent. Wings fuscous, the submarginal and marginal nervures black, the stigmal about as long as the marginal.

Legs black, the base of tibiæ and tarsi, piceous. Abdomen oblong-oval, polished, black, the petiole 3 times as long as thick, strongly fluted.

HABITAT.—Portland, Oregon.

Type in Coll. Ashmead.

Described from a single specimen, collected by H. F. Wickham.

Paramesius pallidipes, sp. nov.

(Pl. xvi, Fig. 5, ♀.)

♂. Length, 2.5^{mm} . Polished black, covered with some sparse, long hairs. Antennæ 13-jointed, longer than the body, cylindrical, pale ferruginous; pedicel and first flagellar joint of an equal length, not half as long as the second, the joints after the first about equal, slightly more than 4 times as long as thick, the second excised at base. Meso-

notum with two furrows; scutellum with a deep fovea across the base, crenulate at bottom; middle carina of metathorax acutely prominent at base. Legs pale, brownish-yellow. Wings fusco-hyaline, the venation brown, the stigmal about as long as the marginal vein, short; basal vein indistinct. Abdomen black, smooth, shining, the petiole $2\frac{1}{2}$ times as long as thick, coarsely fluted, pubescent beneath.

♀. Length, 3^{mm}. Agrees well with the ♂, except the antennæ are gradually incrassated toward tips, flagellar joints 1 to 6 gradually shortening, the basal joints rather long, the first about as long, but not so thick, as the pedicel, joints 7 to 9 very little longer than thick, the last fusiform, stouter and a little longer than the two preceding joints united.

HABITAT.—Carolina and District of Columbia.

Type ♂ in Berlin Museum, the ♀ in Coll. Ashm.

Described from a single ♂ specimen in Berlin Museum, labeled as having come from Dr. Zimmermann, and 2 ♀ specimens in my collection taken near Washington.

SPILOMICRUS Westwood.

Phil. Mag., 1, p. 129 (1832); Förster Hym. Stnd., II, p. 123.

(Type *S. stigmatalis* Westw.)

Head transverse or subglobose, the occiput rounded, the cheeks slightly pubescent; ocelli 3 triangularly arranged; eyes broadly oval.

Antennæ inserted on a frontal prominence, 13-jointed in both sexes, in ♀ incrassated toward tips, submoniliform, the scape subclavate extending beyond the ocelli; pedicel stouter and longer than the first funicular joint; in ♂ filiform long, covered with a short, dense pubescence, the pedicel small, rounded, the second funicular joint usually as long or longer than the first, the first slightly emarginate at base, the joints beyond long, cylindrical.

Maxillary palpi 5-jointed.

Mandibles short, bifid.

Thorax long ovoid, the prothorax visible from above, more or less woolly, especially at the sides; mesonotum with two furrows often abbreviated anteriorly, seldom entirely wanting; scutellum with two oblong foveæ at base, metathorax short, emarginate posteriorly, tridentate.

Front wings pubescent, ciliated, the submarginal vein terminating in a punctiform marginal vein before the middle of the wing, the costal cell distinct, closed, the basal vein usually quite distinct; the short stigmal vein often has a backward-directed branch.

Abdomen oblong-oval, composed of seven segments in the ♀ and eight in the ♂, the petiole long, fluted, its apex covered by the projecting base of the second segment, the second segment occupying most of the surface and without sulci at base.

Legs clavate, pilose, the tarsi long, slender, the posterior tarsi with the basal joint almost twice as long as the second.

Resembles both *Paramesius* and *Basalys*; from the former it is distinguished by the distinct basal nervure, usually a less distinctly pointed abdomen and the structure of the second segment, which overlaps the apex of the petiole and is without sulci at base, while the distinct mesonotal furrows, longer submarginal vein, and the wholly different antennæ in the ♂ separate it from the latter.

TABLE OF SPECIES.

Scutellum with 2 foveæ at base.	
Scapulæ not separated.....	2
Scapulæ separated posteriorly.	
♀. Five terminal joints of antennæ black, rest of antennæ brownish-yellow or rufous.	
Scutellum with a row of 6 large punctures at apex, the shoulders with a grooved line.....	S. ARMATUS Ashm.
Scutellum with a row of 6 small punctures at apex, the shoulders without a grooved line.....	S. ATRICLAVUS, sp. nov.
♂. Antennæ and legs brownish-yellow, the flagellar joints long, nearly equal, the first two a little longer, about five times as long as thick	
	S. FLAVICORNIS, sp. nov.
2. Coxæ and femora black.	
♂. Antennæ black, first three flagellar joints about equal, the second excised at base, about four times as long as thick, the following three times as long as thick.....	S. ATROPETIOLATUS Ashm.
	! S. FOVEATUS Prov.
	! S. LONGICORNIS Prov.

Spilomicrus armatus, sp. nov.

(Pl. xvi, Fig. 7, ♀.)

♀. Length, 3.1^{mm}. Polished black, impunctured, with long, sparse hairs; a tuft of pubescence on cheeks behind, collar at sides and petiole beneath, griseous. Antennæ 13-jointed, brownish-yellow, the 5 terminal joints black or fuscous; the flagellum is about 2½ times as long as the scape, thickened toward tip, the joints 6 to 10 quadrate, the last oblong. Thorax with two furrows, the scapulæ with a long grooved furrow; scutellum rather flat, with 2 large foveæ at base, grooved lines at sides, at apex truncate and with a row of 6 large punctures; metathorax with an acute, triangular central carina, the sides pubescent. The mesopectus has 3 or 4 distinct striæ just above the middle coxæ. Wings subhyaline, the stigma rufo-piceous, triangular; basal nervure wanting, indicated only by a wrinkle in the wing surface. Legs brownish-yellow, the first joint of trochanters long, clavate. Abdomen oblong-oval, polished, black, the petiole a little more than twice as long as thick, strongly fluted, with long, sparse pubescence above and woolly beneath, the wool extending on to the second ventral segment.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Spilomicrus atriclavus, sp. nov.

♀. Length, 3^{mm}. Polished, black, impunctured, and agreeing closely with *A. armatus* but differs as follows: the five terminal joints of antennæ are black, and more abruptly separated from the funicle, the first four being transverse-quadrate, about twice as broad as long; the scapulæ are without a grooved line; there is a row of 6 small punctures at apex of scutellum; the wings are subfuscous, while the legs are more distinctly rufous.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

Spilomicrus flavicornis, sp. nov.

(Pl. xvi, Fig. 7 a, ♂ antenna.)

♂. Length, 1.4^{mm}. Polished black; head twice as wide as thick through antero-posteriorly, the cheeks oblique. Mandibles and palpi pale. Antennæ 14-jointed, honey-yellow, about as long as the body; scape as long as the anterior femora, excluding the trochanters; pedicel longer than thick; first and second flagellar joints equal, longer than any of the following; joints beyond to the last moniliform, only slightly longer than thick, the last joint very little longer than the penultimate. Thorax smooth, with distinct but delicate mesonotal furrows. Pronotum with an impression at sides just in front of the tegulæ. Scutellum with the fovea at base separated into two parts by a delicate carina. Metapleura finely rugose, scarcely pubescent. Tegulæ rufous. Wings hyaline, pubescent, ciliated, the veins yellowish. Legs, including coxæ, honey-yellow. Abdomen oval, polished, the petiole nearly thrice as long as thick, finely sculptured, with a longitudinal furrow above toward the sides, and very finely, sparsely pubescent.

HABITAT.—Arlington, Va.

Types in National Museum and Coll. Ashmead.

Described from specimens taken by Mr. Theo. Pergande, July 13, 1884.

Spilomicrus atropetiolatus Ashm.

Ismarus atropetiolatus Ashm., Bull. No. 1 Col. Biol. Assoc., p. 11.

♀. Length, 2^{mm}. Black polished, with some long, scattered, sparse, grayish pubescence, the face, as well as the metapleura and petiole, more densely pubescent. Face prominent. Eyes bare. Antennæ 13-jointed, black, pubescent, the scape very long, slender, a little more than twice as long as the third joint; the pedicel short, much less than half as long as the third, narrowed at base, the third and fourth joints of about an equal length, the fifth joint and joints beyond slightly shorter than the third, and all narrowed at base and of about an equal length. Thorax smooth, without grooves. Mesopleura smooth, bare, with a slight furrow a little below the middle, more distinct anteriorly and

almost obliterated posteriorly. Scutellum smooth, quadrate behind, the margins delicately keeled, and with two rather deep oblong foveæ at base. Metathorax and metapleura delicately sculptured; the metathorax has a delicate median longitudinal keel, which becomes forked posteriorly. Legs dark red, pubescent. Abdomen polished, bare, except a few hairs surrounding the apex; the petiole is about half the length of the abdomen, opaque, fluted, and hairy. Wings subhyaline, pubescent; veins pale brown, the marginal vein black or piceous.

HABITAT.—West Cliff, Colo.

Type in Coll. Ashmead.

This species was received from Mr. T. D. A. Cockerell.

***Spilomicrus longicornis* Prov.**

Nat. Can., XII, p. 262; Faun. Ent. Can., II, p. 561, ♀; Cress., Syn. Hym., p. 251.

♀.—Long. .11 pce. Noir, poli, brillant; les mandibules, la base des antennes, les écailles alaires avec les pattes, jaune-roussâtre. Antennes longues, un peu plus épaisses à l'extrémité, noires, roussâtres à la base, insérées sur un tubercule frontal. Thorax plus épais en avant; écusson proéminent avec une petite fossette à la base. Ailes hyalines, fringées, velues, la nervure formant la petite cellule radiale, noire, bien distincte, se prolongeant inférieurement jusqu'à la rencontre ou peu s'en faut du cubitus, point d'autres nervures distinctes à part celles de la base. Pattes longues, grêles, les cuisses et les jambes légèrement renflées, les hanches noires. Abdomen à pédicule strié, de la moitié de sa longueur environ, le reste en forme de losange, terminé en pointe, déprimé, poli, brillant. Tarière non apparente. (Provancher.)

HABITAT.—Canada.

Unknown to me. Judging from the description of the venation, the species is a Belytid and not a Diapriid.

***Spilomicrus foveatus* Prov.**

Add. et Corr., p. 176; Cress. Syn. Hym. N. A., p. 251.

♀.—Long. .13 pce. Noir, les pattes et les antennes jaunes-miel. La tête en carré avec la face renflée jusqu'au milieu, formant une protubérance sur laquelle sont insérées les antennes. Antennes de 13 articles, jaunes, les articles terminaux bruns, le premier article fort long, les suivants très courts, poilus, les 4 à 5 terminaux épaissis graduellement en massue. Thorax poli, brillant, beaucoup large en avant, l'écusson brillant avec une petite fovéole transverse en avant. Ailes velues, fringées, sans taches n'ayant de bien apparente qu'une petite nervule stigmatique un peu courbé, d'autres nervures moins distinctes formant une cellule brachiale triangulaire. Pattes d'un beau jaune-miel, avec les cuisses et les jambes renflées en massue à l'extrémité. Abdomen à pédicule court, mais distinct, déprimé à 2^e segment très grand, rétréci en pointe et poilu à l'extrémité; tarière droite, très courte.

Se distingue surtout du *longicornis*, par son abdomen à pédicule plus court et ses antennes plus distinctement en massue. (Provancher.)

HABITAT.—Cap Rouge Canada.

Unknown to me, but evidently not a true *Spilomicrus*.

HEMILEXODES Ashm., gen. nov.

(Type *H. floridana*.)

Head subglobose, the cheeks rounded; ocelli 3 small, triangularly arranged; eyes oval.

Antennæ 13-jointed in both sexes, inserted on a slight frontal prominence; in ♀ incrassated toward tips, submoniliform; in ♂, long filiform, the joints long, cylindrical, pilose.

Maxillary palpi 4-jointed.

Thorax subovoid, the mesonotum broader than long, without furrows, the scutellum subconvex with grooved lines at the sides and a fovea across the base, the metanotum very short, the posterior face carinated above.

Front wings pubescent, ciliated, the submarginal nervure reaching the costa just before its middle, marginal vein punctiform, stigmal vein distinct, oblique, two or more times longer than the marginal nervure; basal nervure wanting the postmarginal nervure distinct.

Abdomen oblong-oval, petiolated, the second segment very long, with sulci at base.

Legs clavate.

Distinguished from *Hemilexis* in having no mesonotal furrows and no basal nervure; also by the difference in the male antennæ, all the flagellar joints being long and cylindrical, pilose.

Hemilexodes floridana, sp. nov.

(Pl. xvi, Fig. 8, ♀.)

♀. Length, 1.5^{mm}. Entirely honey-yellow, except the head, which is brownish. Antennæ 13-jointed, the flagellar joints, after the fourth, round-moniliform. Thorax without furrows; scutellum with a transverse fovea at base; metathorax carinated. Wings hyaline, strongly fringed, entire, the nervures pale yellow, the stigmal vein long, oblique, more than 3 times as long as the short marginal. Abdomen oblong oval, truncate at tip, smooth, polished, the petiole 1½ times as long as thick with raised lines toward the sides.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Other species in this genus are known to me from the West Indies.

SYNACRA Förster.

Hym. Stud., II, p. 128 (1856).

Chlidonia H. Sch., Forts. Faun. Ins. Germ. Cl. VII.

Artibolus Hal., Nat. Hist. Rev., IV, p. 173 (1857).

(Type *Diapria brachialis* Nees).

Head subglobose, the cheeks rounded, the occiput scarcely margined; ocelli 3, triangularly arranged, rather close together on the crown; eyes oval.

Antennæ inserted on a frontal prominence; in ♀ 12-jointed, terminating in a 5-jointed club; in ♂ 14-jointed, filiform, the flagellar joints long, cylindrical, pilose, the first excised.

Mandibles subrostriform, bidentate at tips.

Thorax ovate, the mesonotum with 2 distinct furrows, the scutellum convex, with a fovea at base; metathorax smooth.

Front wings pubescent, the submarginal nervure reaching the costa near the middle, the marginal vein short, the stigmal vein distinct with an appendage, basal nervure distinct.

Abdomen petiolate, oblong, oval or obovate, the petiole short, rugulose, the second segment very long.

Legs clavate.

No species in this genus is known out of the European fauna.

GLYPTONOTA Förster.

Hym. Stud., II, p. 122 (1856).

(No type mentioned.)

Head transverse, the frons rounded, not impressed, occiput rounded; ocelli 3, in a triangle, eyes rounded.

Antennæ inserted on a slight frontal prominence; in ♀ 12-jointed, clavate, the 4 or 5 terminal joints enlarged, the last being twice as large as the penultimate; scape cylindrical, slightly curved, reaching a little beyond the ocelli; pedicel oval, shorter than the first funicular joint; in ♂ 13-jointed, filiform.

Maxillary palpi 5-jointed.

Mandibles short, bidentate at tips.

Thorax oblong-oval; prothorax visible from above, impressed laterally; mesonotum with 2 distinct furrows; scutellum large, subconvex, foveated at base and with a distinct frenum posteriorly; metathorax emarginated, the posterior angles acute.

Front wings pubescent, the submarginal vein reaching the costa at about half the length of the wing, the marginal vein punctiform, with a short oblique stigmal vein; basal vein wanting.

Abdomen ovate, 7- or 8- segmented, the petiole longer than thick, faintly strigose, beneath towards apex angulately produced; second segment very large, occupying more than two-thirds of the body of the abdomen, with 3 sulci at base.

Legs moderate, sparsely pilose, the femora and tibiæ clavate, tibial spurs weak, the posterior tarsi short, the basal joint more than twice as long as the second.

The genus seems to be a valid one, although Förster mentions no type, and I can find no described European species.

The following, therefore, appears to be the first species described:

Glyptonota nigriclavata, sp. nov.

(Pl. xvii, Fig. 1, ♀.)

♀. Length, 2.8^{mm}. Polished black, sparsely pilose; antennæ, except the 4 terminal joints (or club) which are black, mandibles, palpi, tegulæ, and legs, pale brownish-yellow. Antennæ 12-jointed, clavate; pedicel stouter and a little longer than the first funicular joint; the funicular joints to the club are very gradually shortened, but gradually widened, the

last two, or the fifth and sixth, being wider than long, the club joints are slightly pedicellate, transverse, increasing in size, the last very large cone-shaped. Mesonotal furrows deep and broad. Scutellum with a punctate frenum and two broad foveæ at base. Metathorax rugosopunctate, pubescent. Wings hyaline, pubescent, fringed. Abdomen smooth, polished, impunctured, the petiole longitudinally striated.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen, taken by myself along the canal at Georgetown.

TROPIDOPSIS Ashm., gen. nov.

(Type *T. clavata* Ashm.)

Head subglobose, the face in the female flat, with delicate side keels; ocelli 3, triangularly arranged; eyes large, rounded.

Antennæ in ♀ 12-jointed, terminating in a large, abrupt, 3-jointed club, the funicle slender; in ♂ 14-jointed, filiform, longer than the body, the flagellar joints, except the first and last, elliptic-oval, pilose.

Mandibles short, bifid.

Thorax as in *Loxotropa*, the metathorax emarginated posteriorly, the angles a little prominent, centrally with an acute carina.

Front wings pubescent, the submarginal nervure reaching the costa at about the middle, the marginal nervure about twice as long as thick, the stigmal vein not developed, the basal nervure distinct.

Abdomen petiolate, oblong-oval, the second segment very long.

Legs clavate.

Allied to *Loxotropa*, but readily distinguished by the much longer submarginal nervure, presence of facial keels, and the difference in the male antennæ.

Tropidopsis clavata, sp. nov.

(Pl. XVII, Fig. 2, ♀; a, ♂ antenna.)

♀. Length, 1.4 mm. Brownish-red or ferruginous, smooth, polished; antennæ, except club and legs, pale, or yellowish. Antennæ 12-jointed, terminating in an abrupt 3-jointed black club, the first two joints of which are quadrate, the last oblong; funicle 7-jointed, slender, the first joint about twice as long as the second, the following not longer than thick, the last two or three slightly transverse; pedicel obconic, much larger and stouter than the first funicular joint. Head globose, the face flat with delicate side keels. Eyes large, rounded. Scutellum with a single fovea at base. Metanotum emarginate, the angles a little prominent. Abdomen oblong-oval, the petiole a little longer than thick, pubescent. Wings hyaline, fringed, the submarginal vein reaching the costa at about the middle of the wing, ending in a subtriangular marginal vein; basal nervure straight.

♂. Length, 1.3 mm. Antennæ longer than the body; 14-jointed, fili-

form, the flagellar joints, except the first three and the last, elliptic-oval, the fourth and following stouter than the three preceding. Abdomen oblong-oval, the petiole about twice as long as thick, cylindric, striated, subpubescent; otherwise color, etc., as in female.

HABITAT.—St. Vincent, West Indies.

Types in National Museum.

IDIOTYPA Förster.

Hym. Stud., II, p. 122 (1856).

Mionopria Hal., Nat. Hist. Rev., IV, p. 172.

(Type *M. maritima* Hal.)

Head subrotund, the occiput rounded; ocelli 3, in a triangle; eyes large, rounded or oval.

Antennæ in ♀ 12-jointed, clavate, the pedicel shorter than the first funicular joint; club 5-jointed; in ♂ 13-jointed, filiform, pubescent, the scape reaching beyond the ocelli, cylindric; pedicel small; first flagellar joint as long or slightly longer than the second; second, more or less excised at base; the following joints all cylindrical, equal or subequal.

Thorax ovoid, the prothorax distinctly visible from above, transverse, the sides bare; mesonotum wider than long, with two distinct furrows, slightly diverging anteriorly; scutellum subconvex, with an impressed line at sides and unifoveated at base; metathorax short, emarginated posteriorly, a conic prominence at base above, and with the angles acute.

Front wings pubescent, the costal cell complete; the submarginal vein reaches the costa at about half its length, terminating in a distinct marginal vein; the postmarginal vein sometimes slightly developed; the stigmal vein usually short, but distinct, with a spurious vein from its tip, directed backwards; the basal cell distinct, although the median nervure is more or less hyaline before it joins the basal nervure.

Abdomen subovate or oblong-oval; in ♀ 8-jointed, the petiole distinct, two or three times as long as thick; second segment very large, with a median sulcus at base; following segments short.

Legs rather long, the femora and tibiæ clavate, basally very slender, pilose, the tibial spurs weak but distinct, the posterior tarsi longer than their tibiæ, the basal joint more than thrice the length of the second, the terminal joint also longer than usual; claws small, simple.

Not found in our fauna. On Pl. XVII, Fig. 3, I figure the female of *Idiotypa pallida* Ashm. from St. Vincent, West Indies.

ANEURHYNCHUS Westw.

Phil. Mag., I, p. 129, 1832.

Syn. *Mythras* Hal.

(Type *A. galesiformis* Westw.)

Head transverse, with a short frontal sulcus, the occiput not emarginated, rounded. Eyes rounded. Ocelli 3, in a triangle.

Antennæ inserted on a frontal prominence; in ♀ 12-jointed, clavate or strongly incrassated toward tips, the scape reaching beyond the ocelli, thickened apically; pedicel rounded; in ♂ 14-jointed, long, filiform; the scape cylindrical.

Maxillary palpi 5-jointed.

Mandibles short, bidentate.

Thorax oblong; prothorax visible from above, the angles rounded; mesonotum with two distinct furrows; scutellum subconvex, bifoveated at base; metathorax short, subemarginated, the posterior lateral angles acute.

Front wings with the submarginal vein terminating in a stigma before attaining the costa, and from which issues a short stigmal vein knobbed at tip; basal vein absent.

Hind wings veinless.

Abdomen long, oval, 8-jointed, the petiole strigose, hairy.

Legs moderate, the femora clavate, the tibiæ subclavate, pilose; basal joint of posterior tarsi three or four times as long as the second; claws small, simple.

This genus comes nearest to *Labolips*, but is readily distinguished by the maxillary palpi and the knobbed stigmal vein.

Abbé Provancher described three species under this genus, none of which belong here. *Aneurhynchus aneurus* Prov. is a ♂ *Platygasterid* belonging to the genus *Isocybus*, while *A. spinosus* and *A. inermis* Prov. are *Belytids*.

I have recognized three species in our fauna, which may be tabulated as follows:

FEMALES.

Frontal ridge pale rufous.

Legs, including coxæ, honey-yellow; ventral segments punctate, the last very closely punctate. *A. MELLIPES* Ashm.

MALES.

Frontal ridge pale rufous.

Legs and antennæ pale brownish-yellow; ventral segments smooth, impunctured. *A. FLORIDANUS*, sp. nov.

Frontal ridge black.

Legs and antennæ brownish-yellow; ventral segments finely, sparsely punctate. *A. VIRGINICUS*, sp. nov.

***Aneurhynchus mellipes* Ashm.**

Can. Ent. xx, p. 52.

♀. Length, 2.5^{mm}. Polished black, sparsely pubescent. Antennæ 12-jointed, stout, clavate, rufous; the scape is very thick, a little shorter than half the length of the flagellum; pedicel stouter, but not as long as the first flagellar joint; second flagellar joint shorter than the first; third, shorter than the second; from thence the joints are transverse, increase in size and width, and are well separated. Mesonotal furrows distinct. Scutellum with two transverse foveæ almost

meeting at base. Metathorax closely punctate, pubescent, and with some irregular carinæ. Legs, including the coxæ, honey-yellow. Abdomen polished black, the petiole rugose with some longitudinal sulci. Wings subhyaline, pubescent; the submarginal vein ends in a callosity and a short stigmal vein that also terminates in a knob; from this knob there is a slight trace of a radial vein; the submarginal vein is very pale.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Aneurhynchus floridanus*, sp. nov.**

(Pl. xvii, Fig. 4, ♀; α, ♂ antenna.)

♂. Length, 3^{mm}. Polished black, sparsely pubescent; antennæ, mandibles, palpi, tegulæ, and legs, including coxæ, pale brownish-yellow. Antennæ 14-jointed, hairy, extending to the middle of the abdomen; scape as long as the first and second flagellar joints united; pedicel rounded; first funicular joint about twice the length of the pedicel; the second emarginate at base with a slight tooth beneath, the joints beyond nearly of an equal length, nearly four times as long as thick. Thorax with two deep, broad furrows; the collar with a deep, smooth impression at sides; scutellum with lateral ridges and two large foveæ at base, separated only by a slight carina, the bottom slightly crenate; metathorax rugose with a slight median carina. Wings hyaline, very pubescent, the pubescence dusky; the submarginal vein does not reach the costal edge and terminates in a stigma, the stigmal vein very oblique; the radius or second branch of the stigmal is visible as a long dusky streak, thus forming a very long, open radial cell; basal vein present. Abdomen smooth, polished black, impunctured, sparsely covered with long hairs, the anus pale rufous; the petiole is about twice as long as thick, with irregular grooved lines above, and a deep grooved channel at the sides.

HABITAT.—Fort George Island, Florida.

Type in Coll. Ashmead.

Described from a single specimen.

***Aneurhynchus virginicus*, sp. nov.**

♂. Length, 2.8^{mm}. Very closely allied to *A. floridanus* in color and sculpture, but at once separated by the hind coxæ being black and by the sparsely, but distinctly, punctate ventral segments; while the anus is black and the antennæ are slightly stouter, the flagellar joints being in consequence relatively shorter.

HABITAT.—Harpers Ferry, W. Va.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

LABOLIPS Haliday.

Nat. Hist. Rev., 1857, p. 173.

(Type *L. innupta* Hal.).

(Pl. XVII, Fig. 5, ♀.)

Head rounded. Eyes small, protuberant, hairy. Ocelli 3, in a triangle.

Antennæ, in ♀, 12-jointed, clavate, the scape cylindrical; the pedicel longer than the first flagellar joint, the second to the last transverse-moniliform, slightly pedicellate, the last oval, twice as long as the preceding; in ♂, 14-jointed, filiform.

Maxillary palpi obsolete; labial palpi not jointed.

Mandibles bidentate.

Thorax oblong, depressed; prothorax attenuated into a neck; mesonotum with two furrows; scutellum transverse, subquadrate; metathorax short, truncate at apex, with the angles a little prominent.

Front wings with the submarginal vein not reaching the costa, terminating in a stigma but without a stigmal vein; basal vein subobsolete.

Hind wings veinless.

Abdomen oblong, oval, petiolate.

Legs normal, the femora stout, clavate; the tibiæ subclavate.

This genus has not yet been discovered in our fauna, and the single species described by Haliday, from England, is the only one known.

Tribe II.—DIAPRIINI.

In this tribe, the furthest removed from the *Belytina*, the submarginal nervure reaches the costa at one-third its length or a little before, the costal cell being most frequently open; or the costal and subcostal nervures are confluent as in the *Braconidæ* (*Loxotropa*, *Basalys*, etc.); or it is not, or but slightly, developed (*Galesus*). Eleven genera having these characteristics in common are here brought together. All those of which the parasitism is known, are found living upon Dipterous larvæ.

TABLE OF GENERA.

FEMALES.

- | | |
|---|---------------------|
| Antennæ 13-jointed (except in <i>Myrmecopria</i>)..... | 4 |
| Antennæ 12-jointed..... | |
| Face not greatly lengthened..... | 2 |
| Face greatly lengthened; mandibles rostriform..... | |
| Mesonotum with 2 furrows | GALESUS Curt. |
| 2. Head transverse or subglobose, rarely a little longer than wide..... | 3 |
| Head large and flat; ocelli wanting; mesonotum without furrows; legs short and stout..... | PLATYMISCHUS Westw. |
| 3. Wings with a basal nervure..... | |
| Mesonotum without furrows; club 3 or 4 jointed..... | LOXOTROPA Först. |
| Wings without a basal nervure..... | |
| Mesonotum without furrows..... | |
| Scutellum foveated at base..... | |
| Tip of scutellum compressed from the sides, the disk or apex with a median carina; abdomen usually conically pointed..... | |

TROPIDOPRIA Ashm., gen. nov.

- Tip of scutellum not compressed from the sides, rounded or truncate, without a carina; abdomen ovate or oblong-oval, often truncate at tip.
 Petiole much longer than thick; metathorax always with a distinct ridge or conic prominence at base.....DIAPRIA Latr.
 Petiole not longer than thick, densely woolly; metathorax most frequently without a conic prominence at base, usually areolated.
 Club 3-jointed.....CERATOPRIA Ashm., gen. nov.
 Club 4 or 5 jointed.....TRICHOPRIA Ashm., gen. nov.
- Scutellum not foveated at base.
 Axillæ not separated.....PHÆNOPRIA Ashm., gen. nov.
4. Scutellum not foveated; club consisting of one enlarged joint.
 Mesonotum without furrows.....MONELATA Fürst.
 Scutellum foveated at base, club with more than one joint.
 Mesonotum without furrows, or only slightly indicated posteriorly.
 Basal nervure present; antennal club abrupt, 4-jointed.....BASALYS Westw.
 Basal nervure absent; antennal club not abrupt, the flagellum subclavate; antennæ 14-jointed.....MYRMECOPRIA Ashm., gen. nov.
- MALES.
- Antennæ 13-jointed 4
 Antennæ 14-jointed.
 Scape not especially developed..... 2
 Scape abnormally developed.
 Apterous; mesonotum without furrows.....PLATYMISCHUS Westw.
2. Face not lengthened; mandibles not rostriform..... 3
 Face lengthened; mandibles rostriform.
 Mesonotum with 2 furrows.....GALESUS Curt.
3. Wings with a basal nervure.
 First flagellar joint much shorter than the secondBASALIS Westw.
 First flagellar joint not shorter than the second. 
 Mesonotum without furrows.....LOXOTROPA Fürst.
- Wings without a basal nervure; mesonotum without furrows.
 Scutellum foveated at base.
 Tip of scutellum compressed from the sides; the disk or apex with a median carinaTROPIDOPRIA Ashm., gen. nov.
 Tip of scutellum not compressed from the sides; rounded or truncate, without a carina.
 Antennæ nodose-verticillate, the joints pedunculated.....DIAPRIA Latr.
 Antennæ filiform or moniliform, not nodose-verticillate.
 Antennæ filiform, the joints from the fourth oval or moniliform, but not thickened toward tips.
 Second flagellar joint longer and thicker than the first, usually curved or angulate towards one side, the joints beyond rounded, with long bristlesCERATOPRIA Ashm., gen. nov.
 Second flagellar joint shorter than the first; the first four or five joints twice longer than thick; the joints beyond long-oval or moniliform with short hairs, or joints after the second moniliform, pilose.
 TRICHOPRIA Ashm., gen. nov.
- Scutellum not foveated at base.
 Second flagellar joint about as long as the first, the joints beyond long-oval or moniliform, hairyPHÆNOPRIA Ashm., gen. nov.
4. Scutellum not foveated at base.
 Mesonotum without furrows.
 First flagellar joint not half as long as the second.....MONELATA Fürst.

GALESUS Curtis.

Brit. Ent., p. 341 (1831).

Coptera Say, Bost. Jour., 1, p. 282.*Anisoptera* Her.-Schaeff.(Type *G. cornutus* Panz.)

Head oblong or horizontal, with a profound frontal sulcus, the angles of which are acute; occiput broad, rounded; ocelli 3.

Antennae, in ♀, 12-jointed, clavate-submoniliform, the pedicel very small, rounded; the scape short, stout; in ♂, 14-jointed, filiform; the scape usually angulated a little beyond the middle; the pedicel rounded but larger than the first flagellar joint.

Maxillary palpi 5-jointed.

Mandibles prolonged, rostriform, dentate.

Thorax: Prothorax visible from above; mesonotum with two furrows, slightly converging posteriorly; scutellum rather large, somewhat flat or subconvex, with a grooved line along the sides and bifoveated at base; metathorax emarginated at apex, the lateral angles acute.

Front wings folded, often emarginate or with a slit at apex, pubescent, the submarginal vein not developed or terminating before attaining the costa; the basal cell incomplete; the basal vein obsolete or at least water-lined.

Hind wings veinless.

Abdomen petiolated; in ♀ ovate, in ♂ oblong-oval, composed of apparently but 2 or 3 segments, the second occupying most of the surface and generally inclosing the apical segments, with a sulcus at base; petiole longer than thick, grooved.

Legs rather short, the femora stout, the tibiae clavate, their spurs weak; basal joint of hind tarsi about one-third longer than the second; claws small, simple.

In the oblong horned head, the rostrate mandibles, and the shape of the scape, this genus is quite distinct from all others in the group.

The genus *Coptera* Say, is without doubt identical, and was recognized as synonymous by Mr. A. H. Haliday as early as 1857; besides I have identified his type, *Coptera polita*, which proves to be nothing but a small *Galesus* with emarginated and folded wings.

On Pl. XVII, Fig. 6, I figure *Galesus 6-punctatus* Ashm. from St. Vincent.

Our species may be thus tabulated:

TABLE OF SPECIES.

FEMALES.

Frontal prominence with a large, broad, diamond-shaped fovea; its apex not emarginated between the antennae.

Antennae brown, the legs rufous.....G. QUEBECENSIS Prov.

Frontal prominence with a less distinct fovea, and distinctly emarginate between, the antennae.

Antennae entirely black; the legs piceous.....G. ATRICORNIS, sp. nov.

Scape black, the flagellum piceous; legs honey-yellow.....G. POLITUS Say.

MALES.

Coxæ pale.

Antennæ not longer than the body, brown; legs honey-yellow....G. POLITUS Say.

Coxæ black.

Antennæ longer than the body, piceous; legs piceous.....G. FLORIDANUS Ashm.

Antennæ shorter than the body; scape black, the flagellum brown.

- Flagellar joints twice as long as thick, except the first, which is thrice as long as thick; last two apical abdominal segments rugoso-punctate.

G. TEXANUS, sp. nov.

Flagellar joints not longer than thick, except the first, which is one and a half times as long as thick; last two apical abdominal segments smooth.

G. PILOSUS, sp. nov.

Galesus quebecensis Prov.

Pet. Faun. Can., II, p. 559; Ashm. Can. Ent., XIX, p. 195; Cress. Syn. Hym., p. 251.

♀. Length, 3.2^{mm}. Black, polished, shining; head twice as long as wide, pilose, the cheeks with a tuft of griseous wool; anteriorly profoundly sulcate and exhibiting 4 acute teeth; frontal prominence with a large, broad, diamond-shaped fovea, its apex not distinctly emarginated between the antennæ. Antennæ 12-jointed, extending to the apex of metathorax, brown; the first flagellar joint thrice as long as thick, the second twice as long as thick; the joints from here gradually incrassated, shorter but broader, submoniliform; the last very large; cone-shaped, as long as the first. Thorax with two deep furrows, the scapulæ with a deep sulcus near the tegulæ; tegulæ large, black; metathorax rugose, opaque, pubescent. Wings subfuscous, hyaline basally, pubescent; folded, but not fissured. Legs, including coxæ, rufous. Abdomen a little longer than the head and thorax together, polished black; the petiole stout, with deep longitudinal sulci, sparsely pilose.

♂. Length, 4^{mm}. Black, polished, shining, with the legs red. Antennæ hairy, the joints separated at the sutures; front excavated before for the insertion of the antennæ, with a small point at the middle beneath and another on each side. Thorax elongated, depressed; the metathorax strongly punctured with two carinæ united at the base and diverging toward the summit; the mesothorax tuberculous. Tegulæ large, red, black at base. Legs of a beautiful red, the thighs swollen, and more or less black. Abdomen pedunculate; the petiole grooved above and hairy at the sides, the rest forming a rather short oval; the second segment with small foveæ at base.

HABITAT.—Canada and District of Columbia.

Type ♂ in Coll. Provancher; ♀ in Coll. Ashmead.

The ♂ of this species is unknown to me, and the above description is taken from Abbé Provancher; the ♀ is described from a specimen captured at Washington, D. C., which could only be correlated with this species.

Galesus atricornis, sp. nov.

♀. Length, 2.6^{mm}. Black, polished. Antennæ 12-jointed, clavate, black, reaching only to the tegulæ; first flagellar joint only a little more than twice as long as thick, joints beyond to sixth shorter, subequal;

from here to the last they are longer, quadrate, the last large, cone-shaped. Head oblong, smooth, anteriorly just above the frontal excavation roughened, the angles acute; the frontal prominence emarginated, punctate, with a small discal fovea; beneath the eye is a large, long sulcus. Mandibles black. Thorax with two furrows that terminate anteriorly just before reaching the collar. Scutellum with two large, oblique foveæ. Metathorax pubescent. Wings fusco-hyaline, pubescent, folded, with a deep fissure at apex. Legs piceous, the trochanters, the slender portion of the tibiæ, and the tarsi honey-yellow. Abdomen as long as the head and thorax together, smooth, polished, the apex with some sparse white hairs, the petiole longitudinally grooved, with some sparse pubescence at the apex above and beneath.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from a single specimen received from Mr. W. Hague Harrington.

***Galesus politus* Say.**

Coptera polita Say, Lec. Ed. Say's Works, II, p. 727; Ashm., Can. Ent., XIX, p. 195; Cress. Syn. Hym. N. A., p. 250.

♂ ♀. Length, 2.2 to 2.6^{mm}. Polished black. Antennæ 12-jointed, clavate, reaching slightly back of the tegulæ; scape black, angulated within before the tip; pedicel and the 4 or 5 following joints honey-yellow, the joints beyond piceous, submoniliform, the last the largest, oblong, sometimes wholly piceous. Antennæ in ♂ 14-jointed, filiform, a little shorter than the body, pale brown, the scape black, the flagellar joints about 2½ times as long as thick. Head nearly twice as long as wide, smooth, polished, the anterior angles acute; frontal prominence with a discal fovea and an emargination at apex. Mandibles rufous or pale. Thorax smooth, polished, with two distinct furrows, the middle lobe with a fovea posteriorly. Scutellum with two oblong foveæ at base. Metathorax pubescent. Wings subhyaline, folded, pubescent, with a deep fissure at apex. Legs, including coxæ, honey-yellow or pale rufous. Abdomen oblong oval, polished, not as long as the head and thorax together.

HABITAT.—Indiana, District of Columbia, Oakland, Md., and Fort George, Fla.

Specimens in Coll. Ashmead.

This species is not rare and is widely distributed, occurring from Florida to Canada.

***Galesus floridanus* Ashm.**

Can. Ent., III, p. 195.

♂. Length, 1.5^{mm}. Black, polished, covered with sparse scattered pile. Head only a little longer than wide, smooth, polished, scarcely emarginated anteriorly, not cornuted. Antennæ 14-jointed, longer than

the body, brownish piceous, the flagellar joints with long whitish hairs; scape swollen at the middle but not angulated. Legs honey-yellow or pale rufous, coxæ black, the femora piceous. Wings hyaline, pubescent.

HABITAT.—Fort George, Fla.

Type in Coll. Ashmead.

This species on account of the non-cornuted head may not be a genuine *Galesus*.

Galesus texanus, sp. nov.

♂. Length, 3.5^{mm}. Black, shining; flagellum dark brown; scape and coxæ black; legs honey-yellow, pilose; palpi pale; mandibles blackish. Head twice as long as wide, smooth, except the stemmaticum, which is roughened. Antennæ extending to apex of the petiole, the flagellar joints, except the first, which is longer, fully twice as long as thick. Thorax with two deep, wide furrows, converging and meeting at base of the scutellum; metathorax carinated. Wings subhyaline, pubescent, slightly emarginated at apex, and folded. Abdomen nearly as long as the head and thorax together, polished, the petiole stout, twice as long as thick, fluted, the second segment occupying nearly the whole of the remaining surface, with a long median impressed line, and a fovea on each side of the line at base, apex with some sparse white hairs.

HABITAT.—Texas.

Type in Coll. Ashmead.

Galesus pilosus, sp. nov.

♂. Length, 2^{mm}. Black, polished, pilose; the head only a little longer than wide, cornuted anteriorly, the vertex behind with a row of close punctures; flagellum brown, the joints, except the first and last, moniliform, not longer than wide; scape and coxæ black, the legs distinctly rufous. Collar fluted. Scutellum with 2 large foveæ at base. Metathorax rugose. Wings subhyaline, pubescent. Abdomen a little longer than the thorax, the petiole 1½ times as long as thick, striated, the second segment sulcate at base.

HABITAT.—Texas.

Type in Coll. Ashmead.

Described from a single specimen. The difference in the head, antennæ, petiole, and the sculpture of the second abdominal segment readily distinguish the species.

PLATYMISCHUS Westw.

Phil. Mag., 1, p. 128.

(Type *P. dilatatus* Westw.)

(Pl. xvii, Fig. 7, ♂.)

Head oblong, flattened, the occiput subemarginated. Eyes rounded. Ocelli in ♀ wanting, in ♂ very small.

Antennæ in ♂ 14-jointed, the scape abnormally enlarged, dilated, with a deep emargination within; the flagellum slightly incrassated toward apex, the joints after the first moniliform; in ♀ 12-jointed, clavate, the scape linear, the pedicel longer than the first flagellar joint, joints 2 to 5 subequal, subglobular, the following forming the club.

Mandibles bidentate.

Thorax oblong-quadrate, the prothorax not visible from above; mesonotum convex, without furrows; metathorax very short, not emarginated, the angles not acute, in ♂ sparsely, in ♀ densely woolly.

Wings wanting in both sexes.

Abdomen oval, truncate behind, the petiole very short, stout, woolly, the second segment occupying nearly the whole surface.

Legs short, stout, compressed, clavate, the tarsi short.

This curious genus, known only in a single species, has not yet been recognized in America, the species described as such by Abbé Provancher under the name *Platymischus torquatus* (Add. à la Faune Hym., p. 182), being a Diapriid belonging to the genus *Tropidopria* and allied to *Diapria conica* Latr. and *D. carinata* Thomson.

The genus *Platymischus* was originally characterized from the male; and to the Rev. T. A. Marshall we are indebted for perfecting the generic diagnosis by the discovery of the female. Mr. Marshall believes the genus is parasitic on Dipterous larvæ inhabiting low marshes.

LOXOTROPA Förster.

Hym. Stud., II, p. 122, 1856.

(Type *L. acolutha* Först.)

Head subglobose, often oblong, with a frontal sulcus, the occiput rounded; cheeks woolly; eyes rounded; ocelli 3, minute. Antennæ in ♀ 12-jointed, clavate; the three or four terminal joints most frequently abruptly, enormously enlarged; pedicel usually much larger than the first funicular joint; in ♂ 14-jointed, filiform; scape subclavate; pedicel short; first and second funicular joints lengthened, the first slightly the longer, the second thicker and usually curved, the joints beyond oval or cup-shaped, seldom much longer than wide.

Mandibles short, bifid.

Maxillary palpi, 5-jointed.

Thorax ovoid; prothorax slightly visible from above, usually covered with a whitish wool, always present at sides; mesonotum smooth without furrows; scutellum subconvex, or flat, smooth, truncate at apex, with distinct grooved lines along the sides, and a fovea at base; metathorax short, emarginated.

Front wings pubescent, the submarginal vein terminating in a small stigmated marginal vein before attaining half the length of the wing; anal vein always present.

Abdomen oblong-oval, in ♀ showing 7 segments; the petiole short, woolly; the second segment occupying nearly the whole surface; in ♂ 8-segmented, the petiole longer.

Legs moderate, the femora and tibiæ clavate, the tibial spurs weak, the basal joint of hind tarsi fully twice as long as the second, in the ♂ somewhat shorter.

This genus was originally confused with *Diapria*, but is at once distinguished from it and closely allied genera by the frontal impression, the shape of the scutellum, and the distinct basal nervure. In the shape of the head the female, in many species, recalls somewhat *Galeus*, but the wings and antennæ are quite different.

Our species may be distinguished by the following table:

TABLE OF SPECIES.

FEMALES.

- Wingless or subapterous forms 3
 Winged.
 Frons superiorly not angulated in front of the eyes 2
 Frons superiorly angulated in front of the eyes.
 Antennæ and legs reddish-yellow or rufous; the club abrupt, 3-jointed, black.
 Fovea of scutellum small, rounded, not reaching entirely across the base.
 Metathorax and petiole yellowish *L. COLUMBIANA*, sp. nov.
 Metathorax and petiole black *L. RUFICORNIS*, sp. nov.
2. Scutellum with a single fovea at base.
 Antennæ and legs rufous, the club abrupt, 3-jointed.
 Fovea of scutellum large, transverse, deep, extending entirely across the base, the lateral grooves entire *L. ABRUPTA*, Thoms.
 Fovea of scutellum small, rounded, shallow, not extending entirely across the base, the lateral grooves obliterated basally.
L. CALIFORNICA, sp. nov.
- Scutellum with two small confluent foveæ at base.
 Antennæ and legs yellow, the club abrupt, 3-jointed.
 Second funicular joint much shorter than the first *L. FLAVIPES*, sp. nov.
3. Wings deformed, not extending more than two-thirds the length of abdomen.
 Head and abdomen black, thorax rufous.
 Antennæ and legs yellow, the club abrupt, 3-jointed, black... *L. NANA*, sp. nov.
- Apterous.
 Entirely black.
 Antennæ and legs rufous, the club abrupt, 3-jointed, black.
 Scutellum with a small rounded fovea (*L. CALIFORNICA*.)
 Antennæ and legs rufo-piceous, the antennæ gradually clavate.
 Scutellum with a small, shallow fovea. *L. PEZOMACHOIDES*, Ashm.

Loxotropa columbiana, sp. nov.

♀. Length, 1.5^{mm}. Polished black, impunctured; antennæ, except the large, abrupt, 3-jointed club, the legs, apex of metathorax, and petiole, reddish-yellow. Wings hyaline, pubescent, the stigma piceous, the submarginal and basal nervures pale yellowish. The antennæ are 12-jointed, reaching to the base of the abdomen; scape as long as the

funicle, subclavate; pedicel obconic, longer and thicker than the first funicular joint; funicular joints 2 to 5 a little longer than thick; the sixth not longer than thick; the seventh transverse; club very large, abrupt, 3-jointed, black; the joints quadrate, the last rounded at apex. Anterior angles of thorax acute, piceous; the scutellum with a small, shallow fovea at base, separated into two parts by a delicate carina, a slight groove at each side posteriorly, the apex truncate; metathorax short, yellowish, with a central carina. Abdomen oblong-oval, polished black, the petiole yellow.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

Loxotropa ruficornis, sp. nov.

(Pl. xvii, Fig. 8, ♀; a, head of ♂.)

♂. Length, 1.6^{mm}. Polished black; head twice as wide as thick antero-posteriorly, obliquely rounded off posteriorly. Mandibles rufous. Palpi pale. Antennæ 14-jointed, rufous, longer than the body; second flagellar joint longer than the first, swollen toward the tip, the joints beyond to the last, oval-moniliform, twice as long as thick, the last nearly twice as long as the penultimate. Thorax smooth with deep mesonotal furrows, the middle lobe prominent, convex. Pronotum not impressed at sides in front of the tegulæ. Scutellum with a single large, smooth fovea at base. Metapleura finely sculptured, rufous toward the hind coxæ. Tegulæ rufous. Wings hyaline, pubescent, with moderately short cilia. Legs, including coxæ, reddish-yellow. Abdomen oval, polished, the petiole hardly twice as long as thick, finely sculptured and pubescent.

♀. Length, 1.65^{mm}. Antennæ, except the abrupt, 3-jointed black; club, rufous, flagellar joints 5 to 7 a little transverse; frons with acute tubercles before the eyes; scutellum with a small shallow fovea at base, not divided at base by a carina; postscutellum opaque, shagreened; metanotum, with an acute prominence above, behind the postscutellum, and a deep, oblong fovea above the posterior angles. Wings clear, hyaline, pubescent, while the abdomen is oblong-oval, polished, the petiole finely striated and covered with a griseous wool.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Described from specimens taken by myself while beating in low places along the Potomac River.

Loxotropa abrupta Thoms.

Basalys abrupta Thoms., Öfv., p. 368, ♀; Ashm. Can. Ent., xx, p. 54.

♀. Length, 2^{mm}. Polished black, impunctured; antennæ, except the abrupt 3-jointed black club, and legs, rufous. Head subglobose, the frons somewhat flat, but not horned or tubercular. Antennæ 12-jointed; scape rather stout, as long as the funicle; pedicel stout, about twice the

length of the first funicular joint, funicular joints 2 to 5 not or scarcely longer than thick, 6th and 7th transverse. Scutellum with a fovea all across the base, connected with lateral grooved lines. Metapleura covered with a cinereous pubescence. Wings subhyaline, pubescent; stigma brown, nervures pallid. Abdomen oblong-oval, polished black, about as long as the thorax; the petiole rugose, pubescent.

HABITAT.—Europe, Canada.

A specimen of what is evidently this European species was sent to me, more than four years ago, by Mr. W. Hague Harrington.

Loxotropa californica, sp. nov.

♀. Length, 1.8^{mm}. Allied to *L. abrupta*, but differs as follows: The first flagellar joint is two-thirds the length of the pedicel; the scutellum has a very shallow not large fovea at base, the lateral impressed lines only distinct posteriorly; wings hyaline or very slightly tinged with fuscous; sometimes wanting; the head is a little wider before than behind; cheeks behind, collar at sides, and petiole densely woolly.

HABITAT.—Santa Cruz Mountains, California.

Types in Coll. Ashmead.

Loxotropa flavipes, sp. nov.

♀. Length, 1.3 to 1.6^{mm}. Polished black, impunctured; antennæ (except club) and legs brownish-yellow or reddish-yellow; wings hyaline, pubescent, the stigma piceous. The head is a little longer than wide and a little wider before than behind, the frons flattened. Antennæ 12-jointed, as in *L. columbiana*, the three last funicular joints gradually widened, transverse; club abrupt, 3-jointed, joints 1 and 2 quadrate, joint 3 oblong. Scutellum with 2 small foveæ at base, usually more or less confluent, and with lateral grooved lines posteriorly. Metathorax roughened, pubescent, with an acute prominence above. Abdomen oblong-oval, black, shining, the petiole with a long, cinereous pubescence.

The ♂ agrees with the female structurally, except the foveæ at base of scutellum are deeper and always confluent, and in having 14-jointed, filiform-moniliform antennæ. Legs and antennæ honey-yellow. The pedicel and the second flagellar joint are about of an equal length, the latter a little curved or dilated toward one side at apex, the first more slender and shorter, the following, to the last, rounded-moniliform, the last ovate.

HABITAT.—Maryland, Virginia, and District of Columbia.

Types in Coll. Ashmead.

Loxotropa nana, sp. nov.

♀. Length, 1^{mm}. Head and abdomen black, polished; thorax rufous; legs and antennæ, except the club, brownish-yellow, or honey-yellow; wings not fully developed, narrow, not reaching to the tip of the abdo-

men. The head is longer than wide, a little narrower behind than before, the frons flattened. Antennæ, 12-jointed, with an abrupt 3-jointed, black club; pedicel much stouter and larger than the first funicular joint; funicular joints 2 to 5 a little wider than long, the following transverse and shorter. Scutellum with a small rounded fovea at base.

HABITAT.—Jacksonville and Fort George Island, Fla.

Types in Coll. Ashmead.

***Loxotropa pezomachoides* Ashm.**

Can. Ent., xx, p. 53.

♀. Length, 1.2^{mm}. A small apterous, highly polished, black species, with dark rufous-colored legs and antennæ, and covered with long, sparse hairs; the cheeks and collar woolly. The antennæ are long, gradually increased towards tips, the first flagellar joint a little longer but not quite so thick as the pedicel, the joints 2 to 5 longer than thick; joints 6 to 9 moniliform, the last conic nearly twice as long as the preceding. Thorax narrowed anteriorly, the scutellum with a very small, slightly impressed fovea at base; the metathorax rugose.

The abdomen is ovate, large, fully twice as wide as the thorax, highly polished, with some sparse, long hairs and a very short petiole.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from four specimens. Quite distinct from the other species of this genus, and probably not a genuine *Loxotropa*, being more closely allied structurally to the new genus *Trichopria*.

TROPIDOPRIA Ashmead, gen. nov.

(Type *Diapria conica* Fabr.)

Head rounded, smooth, the occiput rounded; cheeks woolly; ocelli 3, small, placed on the anterior part of the head; eyes round, usually with 3 or 4 bristles.

Antennæ inserted on a frontal prominence; in ♀ 12-jointed, clavate, submoniliform; scape cylindric, reaching beyond the ocelli; pedicel oval, thicker than the first funicular joint; the first funicular joint cylindric, narrowed basally, at least 4 or 5 times as long as thick, the second, third, and fourth shorter, subequal, all narrowed basally; the joints beyond gradually increase in size and are more or less moniliform, the last the largest, fusiform; in the ♂ 14-jointed, filiform, simple, or pedicellate-nodose with whorls of hairs.

Mandibles short, arcuate, with 2 small teeth at apex.

Maxillary palpi 5-jointed.

Thorax ovoid, the sides flat; prothorax visible from above, densely woolly; mesonotum smooth, longer than wide, without furrows; scutellum convex, compressed from the sides, with a delicate median carina

on the disk and a deep fovea at base; metascutellum conically prominent; metathorax short, woolly, with subacute angles.

Front wings ample, pubescent and fringed; the submarginal vein terminates in a short punctiform marginal vein, at about one-third the length of the wing; otherwise entirely veinless.

Abdomen long, conic-ovate, composed of 6 segments, the petiole longer than thick, fluted, pubescent or woolly; the second occupies about half the whole surface; the third and fourth very short; the fifth as long as the third and fourth together; the sixth still longer, pointed and stylus-like.

Legs long, pilose, especially the tibiæ, the femora and tibiæ clavate, the tibial spurs well developed, or at least not weak, posterior tarsi shorter than their tibiæ, the basal joint scarcely twice as long as the second, claws well developed, falcate.

This genus is founded upon *Diapria conica* Fabr., and is closely allied to *Diapria*; but the carinated scutellum and the difference in the abdomen readily distinguish it, not only from this genus but from all others in the group. In the carinated scutellum we see the first approach to the cupuliform scutellum in the group *Eucoilina*, in the family *Cynipidæ*, and like that group, the genus is parasitic, so far as we know, on Dipterous larvæ.

The following table will aid in determining our species:

TABLE OF SPECIES.

FEMALES.

- Abdomen not produced into a long, conical point, although obtusely pointed .. 2
 Abdomen produced into a long conical point.

Scutellum with a large fovea at base, the bottom usually with 3 or 4 keels.

Antennæ rufous, the five or six terminal joints black or fuscous; legs, including coxæ, rufous T. CONICA Fabr.

2. Scutellum with but a single keel at the bottom of the fovea, the continuation of the scutellar carina.

Antennæ, coxæ, and middle of femora piceous or blackish.

Pedicel longer than the first funicular joint..... T. CARINATA THOMAS.

Pedicel much shorter than the first funicular joint..... T. TORQUATA PROV.

Scutellum with the bottom of the fovea slightly aciculated, but the scutellar carina ceases before reaching it.

Antennæ, coxæ, and middle of femora rufo-piceous.

Club 5-jointed, first flagellar joint nearly twice as long as the pedicel.

T. SIMULANS, sp. nov.

Antennæ, except club, and legs brownish-yellow; club 4-jointed, the first three flagellar joints equal, very little longer than the pedicel, the second and third shorter than first..... T. TETRAPLASTA, sp. nov.

Tropidopria conica Fabr.

(Pl. xviii, Fig. 1, ♀.)

Oynips No. 33, Geoffr., Hist. des Ins., II.*Oynips phragmitis* Schrank, En. No. 647; Vill. Ent., III, p. 76, No. 21 (?).*Ichneumon conicus* Fabr., Ent. Sys., II, 188; Vill. Linn. Ent., III, 212.*Pelus conicus* Jur., Hymn., p. 319; Spin. Ins. Lig. Fasc., III, p. 166.*Diapria conica* Latr., Hist. Nat., XIII, 231; Gen. Crust. et Ins., IV, 37, ♀; Nees, Mon., II, 325, ♂ ♀; Steph. Ill. M., VII, Suppl. 10, Pl. XLVI, fig. 2, ♀; Ratz., Ichn. d. Forst. Ins., III, 186 (Econ.); Thoms., Öfv., 1858, p. 360, ♂ ♀; Marsh., Cat. Brit. Oxy., p. 112.

♂ ♀. Length, 2.5 to 3^{mm}. Polished black; cheeks, collar, metathorax and petiole woolly, the rest of the surface with some sparse hairs; antennæ, mandibles and legs rufous, the scape more or less rufopiceous, the five apical joints black, the first four funicular joints subcylindrical, a little thicker at tip than at base, the first the longest, one and a half times longer than the pedicel, the three following joints equal or very slightly shortened, the fifth much thickened at tip, the sixth, seventh, eighth, and ninth, oval-moniliform, the last cone-shaped, slightly longer than the preceding.

In the male the antennæ are verticillate, the flagellar joints elongate-cylindrical, the second outwardly emarginated at base. Scutellum with a large deep fovea at base, separated into two parts by the medial carina that extends posteriorly to the tip of the scutellum, the bottom with 3 or 4 raised lines; laterally the scutellum is densely pubescent and posteriorly there are some erect hairs. Metathorax densely pubescent or woolly, with a raised prominence at base. Tegulæ black or piceous. Wings hyaline, ciliated. Abdomen longer than the head and thorax together, conically pointed, the petiole pubescent, finely rugose, with two short carinæ at base above; second segment very long, with two foveolæ at base; third and fifth segments about equal in length, twice as long as the fourth; sixth produced into a conic point, about as long as the third, fourth, and fifth together, the ovipositor slightly projecting from its tip.

HABITAT.—England, Europe, and North America.

Specimens in National Museum and Coll. Ashmead.

This European species is now evidently widely distributed in North America, and has probably been imported with its Syrphid host, *Eristalis tenax*. I have specimens from Long Island and Albany, N. Y.; Ottawa, Canada; Arlington, Va.; Washington, D. C.; and Marquette, Mich. It is recorded by Kirchner (Cat. Hym. Europæ, p. 204) as parasitic on *Eristalis tenax*, and I have seen specimens in the Berlin Museum reared from this insect, while Mr. L. O. Howard informs me Dr. Lintner has reared it from this same Dipteron at Albany, N. Y.

Tropidopria carinata Thoms.*Diapria carinata* Thoms., Öfv., 1858, p. 361.

♀. Length, 2.5^{mm}. Polished black; cheeks, collar, metapleura, and petiole posteriorly, woolly; rest of its surface with long, sparse hairs;

antennæ, mandibles, coxæ, and the thickened portion of the femora and tibiæ piceous or brown-black, rest of the legs rufous; the pedicel is stouter and a little longer than the first funicular joint, the joints beyond to the sixth very gradually decreasing, but slightly thickened; the seventh large, oval, the three terminal joints greatly enlarged, the last oblong. Fovea of scutellum smooth at base, separated into two parts by the scutellar carina, the sides not densely pubescent. Metathorax with a prominence at base and foveated at sides, nearly bare. Tegulæ black. Wings subhyaline, pubescent. Abdomen not longer than the head and thorax united, not conically pointed at apex, and depressed, the petiole not much longer than thick, fluted; the second segment occupies the greater portion of its surface, the third short, slightly longer than the fourth, the fifth longer than the third, the sixth not longer than the fifth.

HABITAT.—Canada and Europe.

Specimens in Coll. Ashmead.

A single specimen received from Mr. W. H. Harrington, taken at Ottawa, Canada, could not be separated from European specimens of this species in my collection, and, like *T. conica*, it has probably been imported into this country on some Dipterous host.

***Tripidopria torquata* Prov.**

Platymischus torquatus Prov., Add. et Corr., p. 182.

♀. Length, 2.8^{mm}. Closely allied to *G. carinata*, but with the following distinct differences: The pedicel and two or three funicular joints are more or less rufous, the pedicel much shorter than the first funicular joint, and the club really begins with the fifth funicular joint, the joints from the sixth to the last being quadrate, the last conic; scutellum with a large, smooth fovea at base, without raised lines at bottom and not separated into two parts by the forward extension of the median carina; tegulæ black; wings hyaline; the legs show more rufous than in *D. carinata*, the femora and tibiæ not being so dark; petiole of abdomen longer, more pubescent, and not distinctly fluted; the third segment is longer than either the fourth or the fifth, the latter very slightly longer than the fourth, while the sixth is very little longer than the third.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

Described from Provancher's type, given me by Mr. W. H. Harrington.

***Tripidopria simulans*, sp. nov.**

♀. Length, 2 to 2.5^{mm}. Approaches nearest to *T. torquata*, but differs as follows: Antennæ dark rufous, very gradually clavate, more slender than in *torquata*, the pedicel one-third shorter than the first funicular joint, the funicular joints to the fifth slender, decreasing in length, the

fifth stouter, the joints beyond to the last oval-moniliform, the last cone-shaped. The scutellum has a single large fovea at base, the bottom with some raised lines; the median carina distinct only at the tip of the scutellum. Coxæ piceous-black, the legs rufous. Tegulae black. Wings subhyaline, with a fuscous pubescence. The third abdominal segment is very little longer than the fourth, the fifth and sixth about equal, and longer than the third and fourth together.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from two ♀ specimens received from Mr. W. Hague Harrington.

Tropidopria tetraplasta, sp. nov.

♀. Length, not quite 2^{mm}. Polished, black; cheeks bare; collar, metapleura and petiole woolly; dorsum of metathorax bare, smooth, with a median carina; mandibles piceous; antennæ, except the club, and the legs, including coxæ, pale brownish-yellow. Antennæ 12-jointed, terminating in a 4-jointed club; the pedicel is much stouter, but not quite as long as the first flagellar joint; the first, second, and third flagellar joints equal, the three following a little shorter and thicker, the club rather abrupt, the last joint the largest, oval, but scarcely longer than the penultimate. Scutellum with a large fovea at base, its bottom with about 5 raised lines; dorsum of scutellum carinated, but the carinae not extending into the fovea. Wings large, ciliated, the marginal vein triangular, pale brown. Abdomen pointed-ovate, scarcely longer than the head and thorax together, the petiole short, not longer than thick, woolly, the apex pointed, pilose.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen taken in October. It comes nearest to *T. simulans*, but the antennæ are quite different, having a distinct 4-jointed club, and the color of antennæ and legs are pale yellowish.

DIAPRIA Latreille

Préc., p. 110 (1796); Förster, Hym. Stud., II, p. 123 (1856).

Psilus Panz.

(Type *D. elegans* Jur.)

Head rounded or subglobose, without a frontal sulcus, the occiput rounded. Ocelli 3, small, placed anteriorly. Eyes rounded. Antennæ on a frontal prominence, in ♀ 12-jointed, clavate, or gradually incrassated toward tips, sometimes the last three or four joints much enlarged; the scape extends beyond the ocelli; the pedicel is usually longer and stouter than the first funicular joint; in ♂ 14-jointed, nodose-pedicellate, with whorls of long hairs, the first funicular joint longer than the second, the second curved or dilated toward one side,

Maxillary palpi rather short, 5-jointed.

Mandibles bifid at tips.

Thorax ovoid, the prothorax slightly visible from above, usually woolly; mesonotum a little longer than wide, smooth without furrows; the mesopleura smooth, not impressed; scutellum rather small, sub-convex, rounded off posteriorly without a medial carina, and unifovent at base; metathorax short, woolly, or pubescent, with an angulated prominence at base, and more or less acute lateral angles posteriorly.

Front wings pubescent, with submarginal vein terminating in a punctiform marginal vein at about one-third the length of the wing; otherwise entirely veinless.

Abdomen ovate or oval, 7 or 8 segmented; the petiole longer than thick, woolly, the second segment occupying most of its surface, the following segments being very short.

Legs rather long, pilose; the femora and tibiæ clavate; the tibial spurs distinct; posterior tarsi at least as long as the tibiæ; the basal joint one-third longer than the second.

The student will have no difficulty in recognizing the males in this genus, as here restricted; but with the females it is quite different, many females in the new genera *Ceratopria*, *Trichopria*, and *Phænopria* closely resembling those of *Diapria*. *Phænopria* can always be distinguished by the absence of a fovea at base of the scutellum; *Ceratopria* most frequently has two small foveæ at base of the scutellum; the head is usually longer than wide, with a frontal sulcus, and the club of antennæ is generally abrupt; while *Trichopria*, which is the most closely allied, may be distinguished by the less prominent ridge at base of the metathorax, which is areolated or bifoveolated; the scutellum has one or two shallow foveæ at base, while the abdomen is oblong-oval and less pointed at apex.

The following table will aid in determining our species:

TABLE OF SPECIES.

FEMALES.

Club of antennæ 4-jointed.....	3
Club of antennæ 3-jointed.	
Antennæ and legs reddish-yellow, or yellow, sometimes more or less piceous, the club black.....	2
Antennæ and legs black.	
Second funicular joint two-thirds the length of the first, the following joints to the club cylindrical, at least twice as long as thick.	
	D. CALIFORNICA, sp. nov.
Second funicular joint half the length of the first and very little longer than thick, the following joints to club short, moniliform.	
	D. UTAHENSIS, sp. nov.
2. First funicular joint thrice as long as thick, the following joints at least twice as long as thick.	
Legs uniformly reddish-yellow.....	D. ERYTHROPUS, sp. nov.
Legs piceous, the slender parts of femora, tibiæ, and the tarsi, honey-yellow.	
	D. AGROMYZÆ Fitch.
First funicular joint only twice as long as thick, the following joints scarcely longer than thick.	
Legs yellow.....	D. TEXANA, sp. nov.

3. Head, thorax, and abdomen black..... 4
 Head and abdomen black, the thorax rufous.....D. ERYTHROTHORAX Ashm.
4. Club slender, the pedicel much shorter than the first funicular joint.
 Antennæ and legs long, yellow, the club black; funicular joints all very long,
 slender, the first the longest, twice as long as the pedicel, the others
 subequal..... D. COLUMBIANA, sp. nov.
- Club incrassated, the pedicel longer than the first funicular joint.
 Antennæ and legs piceous or black, trochanters, base of tibiae, and tarsi yellow.
 Last joint of club much enlarged, 4 times as large as the penultimate, the first
 joint distinctly larger than the last funicular joint... D. ARMATA Ashm.
- Last joint of club not especially enlarged, only twice as large as the penultimate,
 the first joint not much longer than the last funicular joint.
 D. COLON Say.
- Antennæ and legs rufous or reddish-yellow, the club, or the terminal joints of
 club alone, black.
- Three terminal joints black.....D. TETRAPLASTA, sp. nov.
- Club wholly black.
 Last four funicular joints not or scarcely longer than thick.
 D. VIRGINICA, sp. nov.
- All funicular joints fully twice as long as thickD. MUSCÆ, sp. nov.

MALES.

- Head and abdomen black, thorax rufousD. ERYTHROTHORAX Ashm.
 Wholly black, antennæ and legs ringed with piceous.....D. MUSCÆ, sp. nov.

The following species described by Thomas Say under the old genus *Psilus*, probably belong in this genus: *Psilus abdominalis*, *P. obtusus*, *P. ciliatus*, and *P. apicalis*. They remain unknown to me.

Diapria californica, sp. nov.

(Pl. XVIII, Fig. 3, ♀; a, ♂ antenna.)

♀. Length, 1.4 to 1.5 mm. Polished black, impunctured, covered with sparse long hairs; sides of collar and petiole woolly; palpi brown black; legs black, pilose, the tarsi dark brown. Antennæ 12-jointed, black, sparsely pilose, terminating in a 3-jointed club; the first flagellar joint is longer than the pedicel, the latter much the stouter; flagellar joints 2 to 6 subequal, the seventh a little longer and stouter than the sixth; club 3-jointed, the last joint ovate, not quite twice as long as the preceding joint but wider at base. Scutellum with a deep fovea at base connected with lateral impressed lines. Metathorax opaquely sculptured, with a prominence above and covered with a fine pubescence. Wings hyaline or very faintly tinged, strongly fringed, the marginal nervure wedge-shaped, rust brown; there is also a fuscous streak across the wing below the marginal nervure. Abdomen ovate, polished, the last segment produced into a little point, with long sparse hairs; petiole a little longer than thick, roughened and covered with a fine woolly pubescence.

The ♂ agrees with the female except the antennæ are 14-jointed, long filiform, with the scape black, the flagellum brown, pilose; the first

flagellar joint is the longest joint, the second is a little shorter, clavate, a little curved, the following, very little shorter, fusiform.

HABITAT.—Santa Cruz Mountains, California.

Types in National Museum.

• *Diapria utahensis*, sp. nov.

♀. Length, 1.4^{mm}. Agrees in every respect with *D. californica*, except as follows: The antennæ are a little shorter; the first flagellar joint is scarcely longer than the pedicel; the second, about half the length of the first; the following to the club all short, not or scarcely longer than thick, very slightly widened, moniliform; club 3-jointed, the first joint moniliform, the last oblong. The fovea at base of scutellum is shallow as compared with *D. californica*, and not connected with the lateral impressed lines. The petiole is as thick as long; therefore a little shorter than in *D. californica*, while the body of the abdomen is a little longer.

HABITAT.—Salt Lake, Utah.

Types in Coll. Ashmead.

Two ♀ specimens received from Mr. E. A. Schwarz.

Diapria erythropus, sp. nov.

♀. Length, 1.6 to 1.8^{mm}. Polished black, impunctured; antennæ, except club, and legs, reddish-yellow; metathorax and petiole piceous; wings hyaline, strongly fringed.

Antennæ long, 12-jointed, terminating in a 3-jointed, black club; the first flagellar joint is about as long as the pedicel, more slender, cylindrical, joints 2 to 6 subequal, seventh much longer and stouter than the sixth; club joints all longer than thick. Collar woolly at sides. Scutellum faintly foveated at base, very slightly ridged toward apex, the sides sloping and with a slight impressed line. Abdomen ovate, a little longer than the thorax, polished black, the petiole piceous or yellowish, scarcely longer than thick, pubescent above and beneath.

The ♂ differs in having long 14-jointed antennæ, rufo-piceous toward tips, the joints relatively as in *D. californica*, the thickened parts of the legs more or less piceous, while the abdomen is shorter and of an oval shape, colored as in the female.

HABITAT.—District of Columbia, Virginia, and Florida.

Types in Coll. Ashmead.

Diapria agromyzæ Fitch.

Second N. Y. Report, p. 303; Cress. Syn. Hym. N. A., p. 251.

“The Wheat Mow Fly’s Parasite. They measure 0.06^{mm} in length, and to the tip of the closed wings, 0.08^{mm}. They are black and shining, with shanks thickened toward their tips, the hind pair very long, and the legs are pale yellowish, with the thighs and the thickened ends of the shanks black. The abdomen is elliptic. The antennæ in the males

are thread-like and nearly as long as the body, composed of 14 joints, which are very distinct, equal, oval, a third longer than broad, the apical one being a little longer and egg-shaped, and the basal one club-shaped, and thrice as long, but scarcely thicker, than the following ones. In the female they are shorter and composed of 12 joints, which are compacted together, the three last enlarged and forming a kind of knob or club, the last joint nearly as long as the two which precede it, its end bluntly rounded."

HABITAT.—New York and Long Island.

Reared by Dr. Fitch from *Agromyza tritici*.

A single ♀ specimen, doubtfully referred to this species, is in my collection obtained from Mr. Martin Linell. It measures 1.5^{mm} long and is similar to *D. erythropus*, but differs as follows: Antennæ piceous-black; the seventh funicular joint is only a little longer and stouter than the sixth; the legs are honey-yellow, with the hind coxæ black, and the clavate parts of the femora and tibiæ piceous.

Diapria texana, sp. nov.

♀. Length, 1.8^{mm}. Closely allied to *D. erythropus*, but with the legs more decidedly yellow, the funicular joints very gradually shortening, the joints after the first only a little longer than thick, the seventh shorter than the sixth and very little stouter, the club much larger. The fovea at base of scutellum is more deeply impressed, the metathorax more pubescent, while the petiole is black; otherwise as in *D. erythropus*.

HABITAT.—Texas.

Type in Coll. Ashmead.

Diapria erythrothorax Ashm.

Can. Ent., XIX, p. 196.

♀. Length, 1.5^{mm}. Head and abdomen black, shining; thorax, reddish-yellow; legs and antennæ, honey-yellow. Antennæ, 14-jointed, the joints pedicellate-nodose, with whorls of bristles; the second flagellar joint the longest, clavate, a little curved, the first, being but two-thirds as long as the second, obconic. The scutellum has a fovea across the base, without distinct lateral impressed lines, the apex slightly ridged or compressed. Collar and petiole, woolly. Wings hyaline, strongly fringed; the nervures pale yellow. Abdomen oval, black, polished, shorter than thorax.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Diapria columbiana, sp. nov.

♀. Length, 2^{mm}. Polished black, impunctured; antennæ, except the slender 4-jointed club, and the legs reddish-yellow. Head sub-globose, narrowed behind the eyes. Antennæ 12-jointed, long and slender, the first flagellar joint twice as long as the pedicel, slender,

cylindrical, joints 2 to 6 very gradually decreasing, the second, fully four times as long as thick, the last, a little thicker than the preceding, very little more than twice as long as thick; club 4-jointed, black, the last joint ovate, a little longer and thicker than the preceding, the others oval. Thorax obliquely narrowed before, the collar produced into a little rounded neck. Scutellum with a curved impression at base. Wings clear hyaline, strongly fringed, the nervures pale yellowish. Hind coxæ large, oblong; all the legs very long, the trochanters long, the femora and tibiæ long, clavate. Abdomen ovate, black, polished; the petiole twice as long as thick, fluted.

HABITAT.—District of Columbia and Virginia.

Type in Coll. Ashmead.

Diapria armata Ashm.

Can. Ent., xx, p. 53.

♀. Length, 1.6^{mm}. Polished black, impunctured, cheeks, collar, metathorax, and petiole, woolly; legs piceous-black, with the trochanters, base of femora, tibiæ, and tarsi rufous. Antennæ 12-jointed, black, clavate, the club 4-jointed, incrassated, the last joint conic-ovate, stouter and as long as the 3 preceding joints united; first funicular joint a little longer and slenderer than the pedicel, the following joints shorter, a little longer than thick and very slightly widened at tips, the last joint a little thicker than the preceding. Scutellum with a transverse fovea at base connected with the lateral impressed lines. Metathorax with a very sharp, prominent, triangularly acute keel just back of the postscutellum, the sides densely woolly or pubescent. Wings hyaline, strongly fringed, with a streak across the wing below the stigma. Abdomen ovate, polished black, the petiole a little longer than thick, fluted.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

A single specimen received from Mr. W. Hague Harrington.

Diapria colon Say.

Poilus colon Say., Bost. Jour., i, 284; Lec. Edit., ii, p. 729.

Diapria colon Cress., Syn. Hym., p. 251.

♀. Length, 1.1^{mm}. Polished black, impunctate; cheeks behind, collar and metapleura woolly; legs black, sutures of trochanters, base of tibiæ, and the tarsi piceous or brown; wings subhyaline, strongly fringed, with a dusky streak below the stigma. Antennæ 12-jointed, terminating in a 4-jointed club, the last joint oblong, as long as the two preceding joints united, the first and second joints moniliform, the first much smaller than the second, the third quadrate, wider. Scutellum with a distinct fovea, the fovea itself with 2 punctures at bottom and connected with impressed lines at the sides, which themselves are connected with a transverse punctate line at the apex of the scutellum.

Abdomen oblong-oval, polished black, the petiole a little longer than thick, striated, pubescent.

HABITAT.—California, Indiana.

This species is recognized from a single specimen discovered in a small lot of Hymenoptera, purchased from a collector in California.

Diapria tetraplasta, sp. nov.

♀. Length, 1.6^{mm}. Polished black; antennæ, except the three terminal joints of the club which are black, dark rufous; legs pale rufous or reddish-yellow. Antennæ 12-jointed, terminating in a 4-jointed club, the flagellum two and a half times as long as the scape; pedicel longer and thicker than the first funicular joint, the following joints to the club scarcely longer than thick; the first joint of club small, oval, the second larger, the third still larger, transverse, the last longer, conic, but not thicker than the preceding. Scutellum with a shallow, smooth, transverse fovea at base. Wings fusco-hyaline, pubescent, and with long ciliæ, the marginal vein small, triangular. Abdomen ovate, pointed at apex, polished black, the petiole about twice as long as thick, piceous, and fluted.

HABITAT.—Carolina and Washington, D. C.

Types in Berlin Museum and Coll. Ashmead.

Described from a specimen in the Berlin Museum, labeled "Carolina, Zimmermann," and specimens in my collection from Washington.

Diapria virginica, sp. nov.

♀. Length, 1.5^{mm}. Polished black; antennæ, except the 4-jointed club and the legs, reddish-yellow; collar, metapleura and petiole covered with a cinereous wool. Antennæ 12-jointed; first funicular joint shorter than the pedicel; the second almost as long as the first; joints 3 and 4 very little longer than thick; 5 and 6 rounded; club black, 4-jointed, the first joint not quite as wide, or as long, as the following, rounded behind, cup-shaped, the second and third quadrate, the last ovate, one-half longer than the preceding. Scutellum with a shallow, transverse fovea at base; the impressed lateral lines only indicated posteriorly, entirely wanting anteriorly. Wings clear hyaline, strongly fringed, the stigma yellowish. Abdomen ovate, polished black, the petiole short, densely woolly.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Described from three specimens.

Diapria muscæ, sp. nov.

♂ ♀. Length, 1.6 to 2^{mm}. Polished black, with some sparse long hairs, the cheeks, collar, metapleura, and petiole covered with a dense, woolly pubescence. Head rounded, when viewed from above, a little

longer than wide. Eyes rather small, oval, coarsely faceted. Mandibles and palpi pale brown. Antennæ inserted on a frontal prominence; in ♀ 12-jointed, pale brown, terminating in a black, 4-jointed club; the scape projects far above the ocelli, above dusky, beneath pale; pedicel stouter and slightly longer than the first funicular joint; the funicular joints slender, cylindric, the joints very slightly shortened to club; the club joints large, quadrately oval, the last oblong; in the ♂ 14-jointed, longer than the body, pale brown, the flagellar joints nodose-pedicellate with whorls of hairs; the pedicel is about half the length of the first flagellar joint, the following to the last shorter, the last pointed, fusiform. Scutellum with a large rounded fovea at base. Tegulæ honey-yellow. Wings hyaline, with long ciliæ. Legs, including coxæ, reddish-yellow, the tip of the posterior tibiæ slightly dusky, the coxæ more or less pubescent, the legs sparsely pilose. Abdomen ovate, scarcely longer than the thorax, subdepressed, the second segment occupying most of its surface, the following segments very short, the third in ♀ being longer than the others.

HABITAT.—Sacramento County, Cal.

Types in National Museum.

Described from many specimens, reared in September, 1890, by Albert Koebele, from Dipterous puparia found in the ground.

A specimen of the puparium, sent with the parasite, shows it to belong to the large family *Muscidæ*.

Diapria abdominalis Say.

Psilus abdominalis Say, Lec. Ed. Say's Works, II, p. 729.

Platymischus abdominalis Ashm., Can. Ent., XIX, p. 195.

Diapria abdominalis Cr., Syn. Hym., p. 251.

Antennæ clavate, as long as the body; black, abdomen whitish.

Inhabits Indiana.

Body black; antennæ broken at the second joint; first joint one-fourth the whole length, whitish; second joint obconic; terminal joint ovate-fusiform, longer than the three preceding joints together; wings very deeply ciliated; abdomen whitish, particularly at base; tarsi white.

Length about one-fourth of an inch. (Say.)

Diapria obtusa Say.

Psilus obtusus Say, Lec. Ed. Say's Works, I, p. 383.

Galesus obtusus Ashm., Can. Ent., XIX, p. 195.

Diapria obtusa Cr., Syn. Hym., p. 251.

Black; feet whitish, thighs black in the middle.

Inhabits Indiana.

Body black, polished; antennæ fuscous; anterior wings white and very obtuse, finely ciliated; ciliæ very short; feet whitish; thighs black, white at base and tip; coxæ black.

Length nearly one-twentieth of an inch. (Say.)

Diapria ciliata Say.*Psilus ciliatus* Say, Lec. Ed. Say's Works, I, p. 333.*Galesus ciliatus* Ashm., Can. Ent., XIX, p. 195.*Diapria ciliata* Cr., Syn. Hym., p. 251.

Black; feet whitish; hairs of the wings elongated.

Inhabits Indiana.

Body black, polished; antennæ with an oblong acute club, at base honey-yellow; petiole of the abdomen and feet honey-yellow; wings deeply ciliated, the hairs longer than the transverse diameter of the wings.

Length less than one-twentieth of an inch. (Say.)

This appears to me to be a *Cosmocoma* in the family *Mymaridæ*.

Diapria apicalis Say.*Psilus apicalis* Say., Bost. Jour., I, p. 283; Lec. Ed. Say's Works, II, p. 729.*Aneurhynchus apicalis* Ashm., Can. Ent., XIX, p. 195.*Diapria apicalis* Cres., Syn. Hym., p. 251.

Antennæ at the tip of the head, which is a little prominent.

Inhabits Indiana.

Body black, polished; antennæ as long as the body, fuscous, with subquadrately moniliform joints; basal joint honey-yellow; terminal joint not much longer than the preceding one; inserted at the tip of the head; beneath the antennæ is rather a broad prominence; costal nervure but little less than half the length of the wing, triangular and black at its tip; feet honey-yellow; petiole distinct.

Length one-twenty-fifth of an inch. (Say.)

CERATOPRIA Ashm., gen. nov.(Type *C. longiceps* Ashm.)

Head globose or oblong, with a frontal impression, the occiput faintly margined, the cheeks with a tuft of wool behind; ocelli 3, very small; eyes rounded.

Antennæ inserted on a frontal ledge, in ♀ 12-jointed, terminating in an abrupt 3-jointed club, the pedicel much longer than the first funicular joint, the first funicular joint only a little longer than thick; in ♂ 14-jointed, filiform, the pedicel small, rounded, the first funicular joint shorter than the second, the second stouter, the joints beyond, except the last, submoniliform, bristly.

Maxillary palpi 4-jointed, stout, the last joint terminating in 2 long bristles.

Mandibles short bifid.

Thorax ovoid, the collar usually woolly, the mesonotum smooth, without furrows, scutellum most frequently bifoveated at base, with lateral grooved lines; metathorax short, woolly, emarginated, bicarinated above, the angles usually acute.

Front wings pubescent, the submarginal vein ending in a small punctiform marginal vein at about one-third the length of the wing; no basal nervure.

Abdomen oblong-oval, with a very short, thick, woolly petiole, the second segment very large, occupying more than two-thirds its whole surface, the following segments very short.

Legs clavate, pilose, the basal joint of posterior tarsi about twice as long as the second.

Very closely allied to *Loxotropa* Förster, but the absence of the basal nervure at once separates it.

The following table will aid in determining the species:

TABLE OF SPECIES.

FEMALES.

- | | |
|---|---------------------------|
| Scutellum with a single fovea at base, head globose..... | 3 |
| Scutellum with an arcuate impressed line at base, head oblong..... | 2 |
| Scutellum with two small foveæ at base, head oblong. | |
| Club abrupt, 3-jointed, black, the joints nearly equal. | |
| Antennæ and legs yellow..... | C. LONGICEPS, sp. nov. |
| Club not so abrupt, 3-jointed, black, the last joint very large, about as long as the two preceding together. | |
| Antennæ wholly black, or piceous-black, legs yellow. | |
| | C. MEGAPLASTA, sp. nov. |
| Antennæ and legs yellow..... | C. BIFOVEOLATA, sp. nov. |
| 2. Club abrupt, 3-jointed, black, the first joint not half the length of the second, the third one-third larger than the second; rest of antennæ and legs yellow..... | C. PUSILLA, sp. nov. |
| 3. Club 3-jointed, incrassated. | |
| Antennæ piceous or black, legs rufous, coxæ and the swollen portion of the femora and tibiæ piceous. | |
| Last joint of club not much larger than the penultimate; first funicular joint thrice as long as thick..... | |
| | C. INFUSCATIPES, sp. nov. |
| Last joint of club greatly enlarged, as large as the two preceding united; first funicular joint twice as long as thick..... | |
| | C. FLORIDANA Ashm. |

Ceratopria longiceps, sp. nov.

♀. Length, 1.4^{mm}. Polished black, impunctured; cheeks behind, collar and metathorax pubescent; antennæ, except club, and the legs yellow. Head oblong, a little longer than wide, with some sparse long hairs. Antennæ 12-jointed, ending in an abrupt 3-jointed club; pedicel longer than the first and second funicular joints united and much stouter; funicular joints 2 to 5 not longer than thick; joints 6 and 7 transverse; club 3-jointed, black, the first and second joints quadrate, distinctly separated, the third or last oval, closely joined to the second. Scutellum flat, triangular, with two small shallow foveæ at base. Metathorax tricarinate, the surface channeled between the carinæ, pubescent. Wings clear hyaline, fringed, but the fringe short; stigma yellowish. Abdomen oblong oval, polished black, the petiole stout, as wide as long.

The ♂ differs in having 14-jointed, filiform-moniliform antennæ, the first flagellar joint being only two-thirds as long as the second, the second being the longest and the stoutest joint and slightly curved; the

following joints are moniliform, except the last, which is ovate; all the flagellar joints have rather short stiff bristles; the head is globose, while the scutellar fovea is a little more deeply impressed than in the female.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

Ceratopria megaplasta, sp. nov.

♀. Length, 1.1^{mm}. Polished black, impunctured; cheeks behind, collar and metathorax woolly; antennæ wholly black, the scape piceous beneath; legs yellow. Head oblong, very little wider before than behind, covered with some long, sparse hairs. Antennæ 12-jointed, clavate; first funicular joint about as long as the pedicel but more slender, cylindrical, the following joints moniliform, very slightly increasing in size to the club; club 3-jointed, the first and second joints quadrate-moniliform, the last oblong, a little larger than the 2 preceding joints together. Scutellum flat, with 2 small foveæ at base. Wings hyaline, fringed, the stigma yellowish. Abdomen ovate, black, polished, the petiole short, stout, rugose, fully as wide as long.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

A single specimen, received from Mr. W. Hague Harrington, differs from the preceding species in the color of the antennæ, the proportions of the antennal joints and in the shape of the abdomen.

Ceratopria bifoveolata, sp. nov.

♀. Length, 1^{mm}. Agrees in shape and general appearance with *C. megaplasta*, but with the following differences: The antennæ, except the club and the legs, are reddish-yellow; the first funicular joint is a little shorter than the pedicel; the abdomen oblong-oval, obtusely rounded at tip; while the petiole is short and so woolly that its sculpture can not be made out; otherwise it agrees perfectly with *C. megaplasta*.

HABITAT.—Harpers Ferry, W. Va.

Type in Coll. Ashmead.

A single specimen. Taken by Mr. E. A. Schwarz, June 19, 1891.

Ceratopria pusilla, sp. nov.

♀. Length, 0.8^{mm}. Polished black, impunctate; antennæ, except the club and the legs, honey-yellow. Head a little longer than wide. Antennæ 12-jointed; the club abrupt, 3-jointed, black, the first joint not half the length of the second and much narrower, the last ovate, longer than the preceding joint; first funicular joint a little longer than thick, the following to last scarcely as long as thick, the last transverse. Scutellum with a curved, slightly impressed line at base. Wings hyaline, pubescent, with short cilia. Abdomen oblong, black, polished,

truncate behind, the petiole small and short, woolly, the second segment with 2 foveolæ at base.

HABITAT.—Arlington, Va.

Type in Coll. Ashmead.

A single specimen.

Ceratipria infuscatipes, sp. nov.

(Pl. xviii, Fig. 3, ♀.)

♀. Length, 1.2^{mm}. Polished black, impunctured; antennæ piceous black; legs rufous, coxæ and the swollen parts of femora and tibiæ, piceous or dusky. Head globose, with long, sparse hairs. Antennæ 12-jointed; the club 3-jointed, incrassated, the first joint rounded, a little, smaller than the second, the second quadrate, the last ovate twice as long as the preceding; first funicular joint cylindrical, as long as the pedicel, funicular joints 2 to 6 shortening, but all much longer than thick, the seventh oval. Collar woolly, metathorax and petiole densely pubescent. Scutellum with a rather large, deep fovea at base. Wings hyaline, fringed, the stigma piceous. Abdomen ovate, black polished, the petiole not longer than thick.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

A single specimen received from Mr. W. Hagne Harrington. In the shape of the head, the large scutellar fovea, length of the funicular joints, and the ovate abdomen, this species is quite distinct from those previously described, and its position in this genus is doubtful.

Ceratopria floridana Ashm.

Cephalonomia floridana Ashm., Can. Ent., xix, p. 196.

♀. Length, 1.1^{mm}. Polished black, impunctured; trochanters, base of tibiæ, and tarsi honey-yellow. Antennæ 12-jointed, ending in a 3-jointed, incrassated club, the last joint being oblong, much stouter than the penultimate, and as long as the two preceding joints together, the first club joint being smaller than the second; first funicular joint cylindrical, about twice as long as thick, the following very slightly widened to the club, a little wider than long. Scutellum with a moderately deep fovea at base. Metathorax and petiole covered with a cinereous pubescence. Wings hyaline, strongly fringed, the stigma brown. Abdomen oblong-oval, black, polished.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

TRICHOPRIA Ashmead, gen. nov.

(Type *T. pentaplasta* Ashm.)

Head subglobose, without a frontal impression, the occiput rounded, cheeks woolly; ocelli 3 small; eyes rounded.

Antennæ, in ♀ 12-jointed, the club gradually incrassated, not abrupt, 4 or 5 jointed; in ♂ 14-jointed, filiform, covered with short, sparse hairs;

the pedicel is small, oblong, or rounded; the second funicular joint shorter than the first, slightly emarginate at base, angulated towards one side at tip, the joints beyond the third oval-moniliform, only slightly longer than thick.

Maxillary palpi 5-jointed.

Mandibles short, bifid.

Thorax ovoid, the prothorax appearing above as a transverse ridge, the sides always woolly; mesonotum smooth, without furrows; scutellum with a single shallow fovea at base, very rarely with two small shallow foveæ, and without lateral impressed lines; metathorax short, bicarinated above, hardly emarginate, the posterior angles not acute or prominent, and always woolly or covered with a dense appressed pubescence.

Front wings pubescent, ciliated, the submarginal vein terminating in a small, triangular marginal vein before attaining one-third the length of the wing; no basal, or other nervures.

Abdomen oblong-oval, the petiole longer than thick, fluted, woolly above and beneath; the second segment occupies most of the remaining surface, with a depression or sulcus at base above, the following segments very short.

Legs clavate, pilose, the posterior tarsi long, slender, the basal joint about twice as long as the second, claws long, curved.

The males in this genus are quite distinct from *Diapria* in the antennal characters, while the females, as before remarked, are quite similar and difficult to separate. The antennæ, however, have always a 4- or 5-jointed club; the scutellum has a more shallow fovea, or two small foveæ at base, and is without the lateral grooved lines which are always present in *Diapria*; the metathorax has rarely the acute prominent ridge at base; while the abdomen is more truncate at apex and less pointed than in *Diapria*.

These characters, I believe, are constant and justify me in creating a new genus, and, with a little study, the student will soon be able to distinguish them at a glance.

As a rule the species are smaller than in *Diapria*, and the following table shows that the genus is well represented in North America:

TABLE OF SPECIES.

FEMALES.

1. Antennal club 4-jointed 2
 Antennal club 5-jointed.

Antennæ not entirely black, the club alone black or fuscous.

Scutellum with a single fovea at base.

Pedicel shorter than the first funicular joint.

Legs, reddish-yellow; pedicel twice as long as thick

T. PENTAPLASTA, sp. nov.

Legs yellow, the femora and tibiæ fuscous; pedicel not longer than thick.

T. ZIMMERMANNI, sp. nov.

Scutellum with 2 small foveæ at base.

Pedicle about as long as the first funicular joint.

Legs rufous T. RUFIPES, sp. nov.

Antennæ entirely black.

Pedicle shorter but thicker than the first funicular joint.

Legs pale rufous, base of coxæ and the thickened portions of the femora and tibiæ more or less piceous T. CAROLINENSIS, sp. nov.

2. Antennæ not wholly black 3

Antennæ wholly black.

Pedicle thicker and a little longer than the first funicular joint.

Last joint of club large, twice the length of the penultimate, first joint small.

Legs black, the trochanters, base of tibiæ and tarsi pale.

T. POPENORI Ashm.

3. Pedicle longer and thicker than the first funicular joint.

Antennæ fuscous or dark brown, club slender, the joints a little longer than wide, the 6 funicular joints slender, cylindric, twice as long as thick.

Legs rufous, the coxæ, trochanters and knees yellow. T. HARRINGTONII Ashm.

Antennæ fuscous only towards the tip, rufous basally, the club stout, the joints, except the first, as broad as long.

Legs reddish-yellow, the femora and tibiæ tinged with rufous.

T. PACIFICA, sp. nov.

Legs dark rufous; club abrupt, fuscous, four jointed, the joints except the last quadrate T. HIRTICOLLIS Ashm.

Pedicle stouter but not longer than the first funicular joint.

Club black, rest of antennæ yellow, the funicular joints, except the last, which is moniliform, are longer than thick.

Legs yellow T. FLAVIPES, sp. nov.

Trichopria pentaplasta, sp. nov.

♀. Length, 1.5^{mm}. Black, polished, impunctured; antennæ, except the club and legs, reddish-yellow. Head rounded. Antennæ 12-jointed, long, terminating in a 5-jointed club; first funicular joint a little longer than the pedicle; the following joints subequal, about three times as long as thick, the last, thickened; club black, the first joint oblong, the second, third, and fourth quadrate, equal, the last, conic, longer but not thicker than the penultimate. Scutellum with a distinct fovea at base. Metathorax carinated, pubescent. Wings hyaline, strongly fringed; the stigma yellowish. Abdomen ovate, black, polished, the petiole 1½ times as long as thick, fluted, pubescent, the second segment truncate at base and slightly overlapping the base of the petiole.

The ♂ has 14-jointed, filiform-moniliform antennæ, the first flagellar joint twice as long as the pedicle and a little longer than the second; the second stouter, a little curved and dilated into an acute point outwardly at tip; the following joints moniliform, the last conical, all the joints with stiff bristles. Scutellum with a deep fovea at base and a slight ridge toward tip; otherwise similar to the ♀.

HABITAT.—Washington, D. C.; Arlington, Va.; and Riley County, Kans.

Types in Coll. Ashmead.

Trichopria Zimmermanni, sp. nov.

♀. Length, about 2^{mm}. Polished black; collar, metapleura, and petiole covered with a dense griseous wool; legs yellowish, the clavate parts of femora and tibiæ and the last tarsal joint fuscous. Antennæ 12-jointed, nearly as long as the body, fuscous; flagellum more than thrice the length of the scape; scape yellowish; pedicel not longer than thick; funicular joints cylindric, about 2½ times as long as thick and a little paler than the club; club brown-black, the first joint narrower than the following, a little longer than wide, the three following joints equal, quadrate, the last conic-ovate. Wings hyaline with a slight fuscous tinge, strongly fringed.

HABITAT.—Carolina.

Type in Berlin Museum.

Described from specimens in Berlin Museum labeled "Carolina, Zimmermann."

Trichopria rufipes, sp. nov.

(Pl. xviii, Fig. 4, ♀; a, ♂ antenna.)

♀. Length, 2 to 2.2^{mm}. Polished, black, with long, sparse hairs; the antennæ, except the 4 apical joints of club, and the legs rufous; cheeks, collar, metathorax, and petiole woolly. Antennæ 12-jointed, the flagellum slightly more than twice the length of the scape; pedicel about as long as the first funicular joint, but stouter; the third, fourth, and fifth joints equal, scarcely longer than thick; the first joint of the club is only slightly thicker than the last funicular joint, moniliform; the second is wider, the two following as wide as long, the last short, conic. Scutellum with 2 minute, almost obsolete, foveæ at base. Wings hyaline, fringed.

The male differs in having 14-jointed filiform-submoniliform antennæ, the first flagellar joint being four times as long as the pedicel, subclavate, the second, stouter and two-thirds as long as the first, slightly curved and dilated toward tip, the following oval-moniliform, the last conical, twice as long as the penultimate; all with sparse, bristly hairs.

HABITAT.—District of Columbia and Virginia.

Types in Coll. Ashmead.

Trichopria carolinensis, sp. nov.

♀. Length, about 2^{mm}. Polished black, impunctured, sparsely pubescent; head rounded; antennæ 12-jointed, black, terminating in a 5-jointed club, the joints of which increase gradually in size; the pedicel is shorter but thicker than the first funicular joint; the funicular joints to the club are slender, cylindric, the first about 2½ times as long as thick, the following very slightly shorter, the last a little thicker than the preceding; the first joint of the club is oval, the second round, the third and fourth submoniliform, slightly wider than long, the last longer, conic-ovate. Scutellum with a shallow, transverse foveæ at base.

legs pale rufous, the base of the coxæ and the clavalte portion of the femora and tibiæ slightly infuscated; sometimes the base of the tibiæ is yellow. Wings hyaline, strongly iridescent, with long ciliæ, the marginal vein short, triangular, brown.

HABITAT.—Carolina and Pennsylvania.

Types in Berlin Museum.

Described from specimens labeled as having been received from Dr. Zimmermann.

***Trichopria Harringtonii* Ashm.**

Loxotropa Harringtonii Ashm., Can. Ent., xx, p. 53.

♀. Length, 1^{mm}. Black, polished, impunctured, with sparse, long hairs; antennæ dark red or rufo-piceous; legs, including coxæ, entirely rufous; collar, metathorax, and petiole with a dense cinereous pubescence; wings hyaline, faintly tinged, strongly fringed, the stigma brown; there is also a brownish streak across the wing from the tip of the stigma.

Antennæ 12-jointed, ending in a long 4-jointed club, the joints nearly equal in size, 1½ times as long as thick; the funicular joints are slender, cylindrical, the first a little shorter than the pedicel; joints 2 to 4 twice as long as thick, 5 and 6 stouter. Abdomen ovate, pointed at tip, the ovipositor slightly exerted; petiole longer than thick, woolly or pubescent.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

A single specimen received from Mr. W. H. Harrington.

***Trichopria Popenoei*, sp. nov.**

♀. Length, 1.5^{mm}. Entirely black, smooth, shining; the trochanters, base of tibiæ and tarsi alone pale rufous or piceous; scutellum with a single fovea at base; metathorax carinated, sparsely pubescent; petiole woolly, not or scarcely longer than thick; abdomen oblong-oval, a little pointed at tip, smooth and shining; wings hyaline, strongly fringed, the stigma piceous; there is a yellowish streak across the wing just beyond the tip of the stigma.

The antennæ are 12-jointed, moniliform; the club 4-jointed, incrassated; the first joint small, rounded; the second larger, cup-shaped; the fourth quadrate; the last still larger, oblong.

The ♂ agrees with the ♀ except that the antennæ are 14-jointed, filiform, and piceous; the first flagellar joint is less than thrice as long as the pedicel or a little longer than the second, the latter dilated beneath a little beyond the middle, the following oval-moniliform.

HABITAT.—Riley County, Kans.

Types in Coll. Ashmead.

My specimens were received from Prof. E. A. Popenoe.

Trichopria pacifica, sp. nov.

♀. Length, 1.1^{mm}. Polished black, impunctured; antennæ, except club and the legs, reddish-yellow; the clavate parts of the femora and tibiæ piceous. Antennæ 12-jointed, ending in a 4-jointed fuscous club, the first joint longer than thick and narrower than the preceding, the second and third, quadrate, the last conic, one-half larger than the preceding; first and second funicular joints about equal, 1½ times as long as thick, cylindrical, the following moniliform. Scutellum with a single fovea at base; collar, metapleura, and petiole woolly. Wings hyaline, strongly fringed, the stigma yellow. Abdomen elliptic-oval, black, polished, the petiole very short.

HABITAT.—Santa Cruz Mountains, California.

Type in National Museum.

Trichopria hirticollis Ashm.

Cephalonomia hirticollis Ashm., Can. Ent., XIX, p. 195.

♀. Length, 1.9 to 2^{mm}. Robust, polished black, impunctured; antennæ, except club, and the legs dark rufous. Head thick, globose, with some sparse long hairs. Antennæ 12-jointed, ending in a 4-jointed fuscous club, the joints, except the last, quadrate-moniliform, the last conic; funicle slender, cylindrical, the first joint twice as long as thick, a little shorter than the pedicel, the following joints subequal, the last two joints not longer than thick. Collar densely woolly at sides. Scutellum with a large fovea at base. Metathorax tricarinated, the pleura sparsely pubescent. Wings hyaline, the ciliæ not especially long, the stigma honey-yellow. Abdomen ovate, black, polished, the petiole short, thick, scarcely as long as wide, pubescent.

HABITAT.—Jacksonville, Fla.

Types in Coll. Ashmead.

Trichopria flavipes, sp. nov.

♀. Length, 1.1^{mm}. Slender, polished black, impunctured; antennæ, except club, and legs yellow; collar, metathorax, and petiole woolly. Antennæ 12-jointed, long; club 4-jointed, fuscous, the joints, except the last, quadrate-moniliform, the first the smallest, terminal joint ovate. Scutellum with a moderate sized fovea at base. Wings hyaline, fringed, the stigma yellowish. Abdomen ovate, as long as the thorax, polished black, the petiole short and densely covered with wool.

HABITAT.—Arlington, Va.

Types in Coll. Ashmead.

PHÆNOPRIA Ashmead, gen. nov.

(Type *D. minutissima* Ashm.)

Head globose, a little broader than the thorax, the frons not impressed; ocelli 3, small; eyes rounded and broadly oval.

Antennæ inserted on a slight frontal prominence; in ♀ 12-jointed, the pedicel always much larger and stouter than the first funicular joint, the first funicular joint only a little longer than wide, the 3 or 4 terminal joints enlarged, forming a club; in ♂ 14-jointed, filiform-moniliform, finely pubescent, the first and second funicular joints elongated, about equal or the second very slightly the shorter.

Maxillary palpi (?).

Mandibles short, bifid.

Thorax ovoid, the prothorax short, woolly; mesonotum smooth, without furrows; scutellum subconvex, rounded behind, without a trace of the lateral impressed lines or a fovea at base; metathorax short, woolly.

Front wings pubescent, strongly ciliated, the submarginal vein terminating in a punctiform marginal vein at about one-third the length of the wing; no other veins; occasionally apterous.

Abdomen oval, slightly pointed at tip, the petiole short, woolly, the second segment occupying most of the surface, the following segments very short.

Legs clavate, pilose or pubescent, the basal joint of posterior tarsi twice as long as the second.

This genus is readily distinguished from all other genera in the *Diapriinæ*, except *Monelata* Förster, by the non-foveated scutellum, and from *Monelata*, which also has no fovea at the base of the scutellum, by having 12-jointed, not 13-jointed, antennæ.

The species are all very small, and evidently parasitic on Muscid larvæ, *P. hæmatobiæ*, having been reared by Dr. Riley from the Horn-fly, *Hæmatobia serrata*.

Our species may be distinguished by the aid of the following table:

TABLE OF SPECIES.

FEMALES.

Wingless forms.....	3
Winged.	
Antennæ with a 4-jointed club	2
Antennæ with a 3-jointed club, the last joint of which is enlarged, ovate.	
Antennæ black or brown-black, funicular joints moniliform, not longer than thick.	
Legs rufous, the coxæ, femora, and tibiæ fuscous..	<i>P. MINUTISSIMA</i> , sp. nov.
Legs entirely reddish-yellow.....	<i>P. HÆMATOBIE</i> , sp. nov.
Antennæ reddish-yellow, the club black.	
Legs reddish-yellow	<i>P. VIRGINICA</i> , sp. nov.
2. Club black or fuscous.	
Legs yellow or reddish-yellow.	
All the funicular joints at least twice as long as thick...	<i>P. SCHWARZII</i> , sp. nov.
3. Antennæ black or brown-black, gradually incrassated.	
Legs rufo-piceous, the trochanters, base of tibiæ, and tarsi pale.	
Abdomen long-oval, $2\frac{1}{2}$ times as wide as the thorax.....	<i>P. APTERA</i> , sp. nov.
Antennæ reddish-yellow, with a distinct 4-jointed black club.	
Legs reddish-yellow.	
Abdomen long-oval, only twice as wide as the thorax....	<i>P. AFFINIS</i> , sp. nov.

MALES.

Wingless forms..... 2
 Winged.

Legs yellow or reddish-yellow.

Scape yellow; flagellum pale brown.

First funicular joint a little shorter than the second, less than thrice as long as thick, the second strongly excised at base, the following joints long-oval, fully twice as long as thick, the last conic, more than one-third longer than the penultimate.....*P. VIRGINICA*, sp. nov.

2. Legs rufous, the femora and tibiae piceous.

Antennæ honey-yellow.

First and second funicular joints nearly equal, more than thrice as long as thick, the joints beyond to the last oval-moniliform, less than twice as long as thick, the last conical, one-third longer than the penultimate.

P. PARVA, sp. nov.

Antennæ piceous-black.

First and second funicular joints not equal, the second not thrice as long as thick, angulate towards one side, the joints beyond to the last long-oval, fully twice as long as thick.....*P. MONTANA*.

Phænopria minutissima, sp. nov.

♀. Length, 0.9^{mm}. Polished black, impunctured; antennæ piceous, the scape rufous; legs rufous, the coxæ and clavate part of femora and tibiae piceous; wings hyaline, strongly fringed, the stigma piceous; collar at sides, metathorax, and petiole with a fine, cinereous pubescence. The antennæ 12-jointed, ending in a 3-jointed club, the last joint oblong, as long as the two preceding joints united; funicle moniliform, the first joint a little longer than thick, the following moniliform, not longer than thick, very slightly increasing in size to the club. Scutellum convex without a trace of a fovea at base. Abdomen ovate, pointed at tip, the petiole very short, not as long as thick.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

Phænopria hæmatobis, sp. nov.

♀. Length, 0.8^{mm}. Very close to *P. minutissima* but differs as follows: The cheeks have a tuft of pubescence not present in the former; antennæ a little stouter, the pedicel larger, oblong; mesonotum a little shorter and not so much narrowed anteriorly as in *P. minutissima*; the petiole a little longer, while the legs are uniformly reddish-yellow.

HABITAT.—Arlington, Va.

Types in National Museum.

The species was reared by Dr. Riley from the larva of *Hæmatobia serrata*.

Phænopria virginica, sp. nov.

(Pl. XVIII, Fig. 5, ♂; a, ♀ antenna.)

♀. Length, 1.1^{mm}. Polished black, impunctured; antennæ, except club, and legs reddish-yellow or yellowish; cheeks behind, collar, and petiole woolly; metathorax pubescent; wings hyaline, fringed, the stigma long, brownish; head thick, globose.

The antennæ are 12-jointed, rather long, the club black or fuscous, 3-jointed, the last joint ovate, about one-half longer than the preceding, the first a little smaller than the second; funicle cylindrical, moniliform, the first joint two-thirds the length of the scape, the second subequal, the following joints not longer than thick. Abdomen ovate, pointed at tip, polished black, the petiole short and very woolly.

In the ♂ the antennæ are 14-jointed, as long as the body, pilose, the second flagellar joint a little longer than the first, slightly curved, and dilated toward apex, the following elliptic-oval, all except the last, about of an equal length, the last conical, much longer than the penultimate. The antennæ, legs, and petiole are yellow.

HABITAT.—District of Columbia and Arlington, Va.

Types in Coll. Ashmead.

Phænopria Schwarzii, sp. nov.

♀. Length, 1 to 1.2^{mm}. Polished black, impunctured; antennæ, except club, and legs reddish-yellow or yellowish; club 4-jointed, fuscous; cheeks behind, collar, metathorax, and petiole woolly. Antennæ about as long as the body, 12-jointed, ending in a 4-jointed club, the joints, except the last, oval-rotund, the last conic, one-half longer than the preceding; funicle very slightly incrassated toward the club, the first joint about as long as the pedicel, but not so thick, the second and following subequal, very slightly increasing in width, the last being only a little narrower than the first club joint. Wings hyaline, fringed, the stigma yellowish. Abdomen ovate, polished black, the petiole thick, as wide as long, the second segment occupying most of the surface of the abdomen, its base inclosing the tip of the petiole.

HABITAT.—Jacksonville, Fla., District of Columbia, Maryland, and Virginia.

Types in Coll. Ashmead and National Museum.

Described from many specimens. The species is dedicated to Mr. E. A. Schwarz, to whom I am indebted for many specimens taken in and around Washington.

Phænopria aptera, sp. nov.

♀. Length, 1.4^{mm}. Apterous; polished black, impunctured. Antennæ black or brown-black, gradually incrassated, submoniliform, the three joints preceding the last very briefly pedicellate, the last conic, not quite as long as the two preceding joints united, the penultimate joint quadrate. Head globose, much wider than the thorax. Cheeks, collar, and metathorax pubescent or woolly. Legs rufo-piceous, the trochanters, base of femora and tibiæ, and the tarsi yellowish. Abdomen oblong-oval, much broader than the thorax, polished black, with sparse hairs at apex, the petiole wider than long, rugose.

HABITAT.—Ottawa, Canada.

Types in Coll. Ashmead.

Described from 8 specimens received from Mr. W. Hague Harrington. The species bears no resemblance to any other species placed in this genus, but closely resembles *Loxotropa pezomachoides* Ashm., with which it was confused in my collection. It is, however, readily separated from that species by the entire absence of a fovea at base of scutellum and the slight difference in the shape of the antennæ.

Phænopria affinis, sp. nov.

♀. Length, 1.2^{mm}. Apterous; polished black, impunctured; antennæ, except the 4-jointed club, and the legs reddish-yellow.

Antennæ 12-jointed, ending in a 4-jointed club, the joints of the club very gradually increasing in size; funicle subcylindrical, the first joint about as long as the pedicel, the following joints very gradually shortening, the last two a little thickened, and none less than twice as long as thick. Cheeks behind pubescent; collar, metathorax, and petiole woolly. Abdomen oblong-oval, wider than the thorax, the second segment overlapping the apex of the petiole, the latter scarcely longer than thick.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

A single specimen received from Mr. E. A. Schwarz.

Smaller and quite distinct from *P. aptera* in the color of the antennæ and legs and in having different shaped antennæ.

Phænopria parva, sp. nov.

♂. Length, 0.8^{mm}. Apterous; polished black, impunctured; antennæ, coxæ, trochanters, base of tibiæ, and tarsi honey-yellow; rest of the legs rufous. The antennæ are long, 14-jointed, sparsely pubescent, the first and second flagellar joints long, subequal, the second slightly the shorter, a little curved and dilated toward apex; the following joints, except the last, oval-moniliform, nearly equal, 1½ times as long as thick, the last conical, longer than the preceding.

HABITAT.—District of Columbia.

Type in Coll. Ashmead.

A single specimen from Mr. E. A. Schwarz, and possibly the opposite sex of *P. affinis*.

Phænopria montana, sp. nov.

♂. Length, 1^{mm}. Differs from *P. parva* as follows: The antennæ are piceous or black, the first and second funicular joints long, subequal, the second, angulately produced toward apex, the following joints elliptic-oval, fully twice as long as thick; metapleura and petiole yellowish, but still woolly, while the coxæ are rufous, not honey-yellow.

HABITAT.—Santa Cruz Mountains, California.

Type in Coll. Ashmead.

A single specimen obtained by purchase. The difference in the length of the flagellar joints and the color of the metapleura and petiole will readily distinguish the species.

MONELATA Förster.

Hym. Stud., II, p. 123 (1856).

Corynopria, Hal. Nat. Hist. Rev., IV, p. 170 (1857).(Type *Diapria parvula* Nees.)

Head rounded, slightly wider than the thorax, with a slight frontal impression, the occiput slightly emarginated and rounded; cheeks pubescent; ocelli 3, small, placed in a triangle anteriorly; eyes rounded.

Antennæ inserted on a slight frontal ledge, in ♀ 13-jointed, clavate, the last joint, which constitutes the club, being abnormally enlarged, several times larger than the preceding; scape cylindrical, reaching considerably beyond the ocelli; pedicel large, a little elongate, much stouter than the funicular joints, and as long as the first two or three together; in ♂ 13-jointed, filiform.

Maxillary palpi 5-jointed.

Mandibles bifid.

Thorax ovoid, the prothorax visible from above as a transverse woolly line; mesonotum a little longer than wide at base, smooth, without furrows; scutellum subconvex without a trace of a fovea at base and at the most separated from the mesonotum by a faint transverse line; metathorax emarginated posteriorly, sparsely woolly, the angles more or less acute.

Front wings pubescent, strongly ciliated, the costal cell scarcely distinct, the submarginal vein reaching the costa a little before half the length of the wing, marginal vein punctiform, the basal vein wanting.

Abdomen oblong-oval, subtruncate posteriorly, the petiole short, woolly, strigose, the second segment very large, without a basal sulcus, beneath at base woolly, the following segments all very short.

Legs moderate, pubescent, the femora clavate, the tibiæ subclavate, the tibial spurs not very prominent, hind tarsi as long as their tibiæ, slender, basal joint much longer than the second.

This genus could only be confused with *Phenopria*, but the enormously enlarged terminal antennal joint in the female and the 13-jointed antennæ in both sexes sufficiently differentiate the two.

Three species are known in Europe, while but two species have been discovered in our fauna, which may be thus distinguished.

Black; antennæ, except the large terminal joint, rufous or yellow.

Legs yellow.

Collar and mesopleura piceous or pale; antennæ yellow.

M. MELLICOLLIS Ashm.

Collar and mesopleura black; antennæ rufous.....*M. HIRTICOLLIS* Ashm.

Monelata mellicollis Ashm.

(Pl. XVIII, Fig. 6, ♀; a, ♂ antenna.)

Can. Ent., XIX, p. 197.

♀. Length, 1^{mm}. Polished black; antennæ, except the abnormally enlarged terminal joint, collar, and legs, honey-yellow; mesopleura,

piceous. Flagellum scarcely twice the length of the scape; pedicel long, stouter than funicle; first funicular joint twice as long as thick; the following all moniliform, the two or three joints preceding the club a little transverse; the club consists of one enormously enlarged joint, fuscous. Abdomen ovate, polished black, the petiole $1\frac{1}{2}$ times as long as thick, yellowish, densely woolly, the wool beneath extending on to the base of the second ventral segment.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

***Monelata hirticollis* Ashm.**

Can. Ent., xx, p. 54.

♀. Length, 1.1^{mm}. Differs from the species just described in being slightly larger, with the antennæ dark rufous, the club black, the legs yellow or reddish-yellow; while the collar, metapleura, and petiole are black and densely woolly.

HABITAT.—Ottawa, Canada.

Type in Coll. Ashmead.

The species was described from a specimen received from Mr. W. Hague Harrington.

BASALYS Westwood.

Phil. Mag., 1833, p. 343.

(Type *B. fumipennis* Westw.)

Head subglobose, the occiput margined, the clypeus entirely separated, the cheeks woolly; ocelli 3, close together in a triangle; eyes rounded.

Antennæ inserted on a frontal prominence, in ♀ 13-jointed, either moniliform, clavate or gradually incrassated toward tips, the scape very long, reaching far beyond the ocelli; in ♂ 14-jointed, filiform, the pedicel usually smaller than the first flagellar joint, the first flagellar joint not more than half the length of the second, the second the longest joint and always excised outwardly at base and dilated at apex, the following joints, except the last, always shorter than the second.

Maxillary palpi short, 5-jointed, the third and fourth joints small, equal, the last elongate, pilose.

Mandibles bifid at tips.

Thorax ovoid, the collar woolly at sides; mesonotum without furrows (except sometimes indications of them posteriorly in the ♀), but prominently elevated in the middle anteriorly; scutellum with a profound fovea at base or with 2 confluent foveæ; metathorax emarginated, with acute angles and a prominent acute median ridge above.

Wings in ♂ large, broad, pubescent; the submarginal vein attains the costa at about one-third the length of the wing or a little beyond; the costal cell closed; marginal vein short, triangular, usually with a

stump of a stigmal vein that has a short backward directed branch; ♀ apterus.

Abdomen pointed, ovate, distinctly petiolated, the second segment very large, with 2 sulci at base.

Legs clavate, pilose, the basal joint of posterior tarsi about one-third the length of the second.

Westwood characterized the genus from the male sex alone, and the difference noticed in the antennæ sufficiently distinguishes it from all other genera with non grooved mesonotum and 14-jointed antennæ.

Thomson characterized the genus as having 12-jointed antennæ, in ♀, but he confused *Loxotropa* Förster with *Basalys*, and all his females are now relegated to that genus.

The genus is undoubtedly closely allied to *Loxotropa* and the females are probably always apterous.

What I take to be the female of *Basalys* has 13-jointed antennæ and agrees in all essential characters with the male. Whether I am right or wrong is, however, questionable, and can only be definitely settled when specimens in both sexes have been reared, or the sexes are captured *in coitu*.

The species in our fauna known to me may be distinguished by the aid of the following table:

TABLE OF SPECIES.

Females	2
Males.	
Scutellum with an oblong fovea across the base.	
Antennæ and legs rufous; wings fuscous.	
First flagellar joint oblong-oval, less than half the length of the second, the second very stout, a little narrowed and curved towards the base, the following joints shorter, fully thrice as long as thick, the last acuminate, 1½ times as long as the penultimate.	
	B. FUSCIPENNIS, sp. nov.
Scape, pedicel, and femora piceous, rest of antennæ and legs pale rufous, or brownish-yellow.	
First flagellar joint longer than thick, about half the length of second, the second stouter towards apex, narrowed and curved towards base, the following joints shorter, not more than 2½ times as long as thick, the last much longer than the penultimate	B. PICIPES, sp. nov.
Scape polished black, pedicel and flagellum brown.	
First flagellar joint oblong-oval, less than half the length of the second, which is dilated outwardly at apex, the following joints equal, 2½ times as long as thick.	B. UTAHENSIS, sp. nov.
2. Winged; antennæ and legs brownish-yellow, the former gradually incrassated and dusky towards tips; pointed tip of abdomen rufous.	B. ANALIS, sp. nov.
Winged; antennæ and legs piceous, the former very short, filiform; bases of tibiæ honey-yellow.	B. BREVICORNIS, sp. nov.
Apterous; legs and funicle honey-yellow; scape and club brown-black, the latter abrupt, 4-jointed	B. CALIFORNICA, sp. nov.

Basalys fuscipennis, sp. nov.

♂. Length, 2.7 mm. Polished black, impunctured; cheeks behind and collar with a dense cinereous pubescence; antennæ, legs, and petiole brownish-yellow; wings fuscous. The antennæ are very long, 14-jointed, tapering toward tips; pedicel rounded, first flagellar joint about twice as long as the pedicel, or less than half the length of the second flagellar joint, the latter the longest joint except the last, very stout and a little curved, the following joints to the last shorter, cylindrical, all about of an equal length, fully thrice as long as thick, the last joint longer than the penultimate. Thorax without furrows, but convexly swollen medially anteriorly, the scutellum with a transverse fovea at base, the sides straight, the postscutellum tricarinated, while the metathorax has the angles lobed and a prominent, blunt, median carina. Wings fuscous, pubescent; the submarginal nervure reaches the costa a little beyond one-third the length of the wing; the marginal vein triangular, piceous, with a cloud below its tip. Abdomen oval, black, shining; the petiole brownish-yellow, only a little longer than thick, fluted, and covered with a fine griseous pubescence.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a single specimen taken by Mr. E. A. Schwarz.

Basalys picipes, sp. nov.

♂. Length, 2 mm. Polished black, impunctured; scape, pedicel, and legs piceous; flagellum brownish or fuscous; base of tibiæ, trochanters, and tarsi paler or brownish-yellow; wings subfuscous. The antennæ are 14-jointed, longer than the body, the first flagellar joint about half as long as the second, the second the longest and stoutest joint except the last, thicker toward apex than at base, a little curved, the following joints not more than two and one-half times as long as thick, cylindrical, the last joint about twice as long as the penultimate, but slenderer. Metathorax covered with a rather dense cinereous pubescence, rugulose. Abdomen entirely black, the petiole fluted, pubescent.

HABITAT.—Washington, D. C.

Type in Coll. Ashmead.

Described from a specimen given me by Mr. O. Heidemann. This species differs from *B. fuscipennis*, in its much smaller size, color of antennæ and legs, the shorter flagellar joints, more pubescent metathorax, and its wholly black abdomen.

Basalys utahensis, sp. nov.

♂. Length, 2 mm. Polished black, impunctured; scape black, shining; pedicel and flagellum brown-black; legs piceous, the trochanters, knees, base and tips of tibiæ and tarsi, rufous. The antennæ are 14-jointed, stouter than in the preceding species, the first flagellar joint less than half as long as the second, the latter one-third longer than

the third, and a little dilated toward tip, joints 3 to 5 about twice as long as thick, the joints beyond to the last about two and one-half times as long as thick, the last one-half longer than the penultimate. The scutellum has a large, deep quadrate fovea at base, the sides parallel, keeled; the metathorax rugose, with the usual central carina above, prominent posterior angles and almost devoid of pubescence. Wings subhyaline, pubescent, the venation pale, the stigma brown, with a slight cloud beneath the tip. Abdomen oblong-oval, black, shining, the petiole very stout, not longer than thick, rugose, pubescent above and beneath.

HABITAT.—City Canyon, Utah.

Type in Coll. Ashmead.

A single specimen given me by Mr. Schwarz. Resembles *B. picipes*, but the antennæ are shorter and stouter, wings paler, while the abdomen is differently shaped.

***Basalys analis*, sp. nov.**

♀. Length, 2.5^{mm}. Polished black; antennæ and legs brownish-yellow, the former dusky toward the tips; collar, metathorax and petiole covered with a white woolly pubescence; scutellum bifoveated at base; metathorax with a pyramidal prominence at base.

Antennæ 13-jointed, very long, the scape unusually long, more than half the length of the flagellum, the flagellum gradually incrassated towards the tip; pedicel stouter but not longer than the first flagellar joint; the flagellar joints to fifth gradually shortening, but widening, the following to the last, submoniliform, the last, enlarged, ovate, about thrice as large as the penultimate.

Wings subhyaline, pubescent, the marginal vein thickened and truncate at apex. Abdomen conic-ovate, one and a half times as long as the head and thorax together, polished black, the pointed tip reddish.

HABITAT.—Carolina and Texas.

Types in Berlin Museum and Coll. Ashmead.

Described from two specimens. The specimen in the Berlin Museum is labeled "Carolina, Zimmermann."

***Basalys ruficornis* Prov.**

Nat. Can., XII, p. 261; Faun. Ent. Can., II, p. 560.

♂. Length, 0.15 inch. Black, polished, shining; the mandibles, with the legs, rust red; the palpi pale yellow. Antennæ ferruginous, inserted on a prominence of the face. Metathorax rugose, short, with two diverging keels. Wings subhyaline, the 2 subcostal nervures, with the stigma, black. Coxæ black at the base. Abdomen with a grooved petiole, margined at the sides, the rest polished, shining, the extremity punctured.

HABITAT.—Canada.

Unknown to me.

Basalys brevicornis, sp. nov.

♀. Length, 3^{mm}. Black, polished; antennæ and legs piceous; the scape beneath, the pedicel and three basal joints of the funicle showing more or less yellow; tegulæ, anterior femora beneath, the slender portion of all the tibiæ and the tarsi, honey-yellow. Mesonotum with two very short grooved lines posteriorly. Scutellum with two oblique foveæ at base; while the metanotum is rugose with a distinct median carina. Abdomen oblong-oval, highly polished, and at base overlapping the short, thick, fluted petiole. Antennæ very short, 13-jointed, sub-filiform, extending scarcely to the tegulæ; the flagellar joints after the first wider than long, the terminal joint oblong. Wings subhyaline, a distinct costal cell, a basal cell, and rather large, triangular stigma, the latter with a distinct backward directed vein.

HABITAT.—Colorado.

Type in Coll. Ashmead.

Remarkable for the brevity and shape of the antennæ.

Basalys californica, sp. nov.

(Pl. xviii, Fig. 7, ♂; a, ♀ antenna.)

♀. Length, 1.6^{mm}. Apterous; polished black, impunctured, sparsely pubescent; funicle and legs, including coxæ, honey-yellow or reddish-yellow; scape and club brown-black. Head globose, the frons slightly impressed, abrupt. Antennæ 13-jointed, terminating in an abrupt, 4-jointed club; funicle slender, filiform, the joints after the first moniliform; club abruptly enlarged, the first joint rounded basally, the two middle joints quadrate, the last, oblong. Thorax subovate, the collar woolly at the sides, the mesonotum flat on disk, with indications of two very short grooved lines posteriorly just in front of the scutellum, the latter with a small fovea at base, the metanotum with a delicate median carina. Abdomen oblong-oval, polished, the petiole about twice as long as thick, striated.

HABITAT.—Santa Cruz Mountains, California.

Types in Coll. Ashmead.

Unfortunately, in making my drawings of this species and before I had drawn up my description, I knocked off the head of the male with my pocket lens; it fell to the floor and could not be found. It is now in too poor a condition for description, but I hope it will be recognized by the figure.

MYRMECOPRIA Ashm., gen. nov.

(Type *M. mellea*, Ashm. ♀.)

Head globose, without a frontal sulcus; the occiput small, convex; ocelli 3, small, close together in a triangle; eyes round, rather coarsely faceted.

Antennæ inserted on a frontal prominence; in ♀ 14-jointed, gradually incrassated, moniliform, with long, bristly hairs; the scape is long, clavate, the first flagellar joint twice as long as the pedicel and one-third longer than the second, both narrowed toward base, the following joints round-moniliform, gradually increasing in size.

Maxillary palpi very short.

Mandibles small, bifid.

Thorax ovoid, rounded before, the prothorax not at all visible from above, the sides bare, flat; mesonotum flat, smooth, without furrows; scutellum subconvex, with a slight median ridge, separated from the mesonotum by a transverse furrow all across the base; metathorax not very short, sloping off posteriorly, the angles not at all prominent; a carina originates just back of the scutellum, forks and extends obliquely on each side to the base of the hind coxæ.

Front wings very large and broad, with long pubescence; the submarginal vein reaches the costa before one-third the length of the wing, ending in a small triangular marginal vein; basal cells two, subequal.

Abdomen short, oval; the petiole scarcely longer than thick, separated from the second abdominal segment by a strong constriction, dilated beneath, and in structure very similar to the nodes in certain ants.

Legs long, pilose, the femora clavate, the tibiæ very long, subclavate, the posterior tarsi thick, somewhat dilated, the basal joint twice as long as the second, the three following joints subequal, the last longer than the second, all very hairy.

By far the most remarkable Diapriid yet discovered, and exhibiting a most remarkable resemblance to certain ants. In venation, the 14-jointed clavate-moniliform antennæ, and in its metathoracic and abdominal characters, it is quite distinct from all other genera in the group, and requires no special comment at my hands, as it could not be confounded with any other genus.

***Myrmecopria mellea* Ashm.**

(Pl. xviii, Fig. 8, ♀.)

Loxotropa mellea Ashm., Can. Ent., xix, p. 196.

♀. Length, 2.3^{mm}. Honey-yellow, polished, sparsely pilose; eyes and tip of abdomen brown. Antennæ 14-jointed, reaching to the middle of the abdomen; scape long, clavate, the length of the first three joints of flagellum united; pedicel half the length of the first flagellar joint, the joints beyond the second, moniliform, subpedicellate, gradually increasing in size. Thorax flat above, without grooves, narrowed before; the prothorax not visible from above; sides flat, but not impressed, bare. Wings very large, broad, and hairy; the submarginal vein attains the costa before one-third the length of the wing; marginal vein short, with

a blunt stump of a stigmal vein; beneath the marginal vein is a narrow, dusky streak; veins yellow.

HABITAT.—Jacksonville, Fla.

Type in Coll. Ashmead.

The species was originally described in the genus *Loxotropa*, but the characters are too entirely different from that genus to permit its remaining there.

The following species of *Pantoclis*, described by Abbé Provancher, and overlooked by me, should have followed *P. floridana* on p. 372:

***Pantoclis inermis* Prov.**

Aneurhynchus inermis Prov. Add. à la Faune., p. 179.

Pantoclis inermis Prov. Add., p. 405.

♀. Long. 15 pce. Noir, poli brillant; les mandibules jaunâtres. Antennes longues jaune-brunâtre, le premier article le plus long, avec long poils peu denses, le 2^e le plus court, les autres allongés. Tête grosse en carré transversal, épaisse en arrière des yeux, à face renflée en tubercule pour l'insertion des antennes. Thorax poli, brillant; l'écusson soulevé mais inerme. Ailes hyalines iridescentes, frangées, à stigmal, la radiale en forme de triangle allongé, ouverte en arrière, ni cubitales, ni discoidales fermées. Pattes jaune-pâle avec les hanches noires, les cuisses renflées en massue à l'extrémité. Abdomen en ovale, poli, brillant, à pédicule fort, poilu, du tiers de sa longueur environ, le 2^e segment fusiforme, noir, le reste d'un jaune plus ou moins noirâtre. (Provancher.)

HABITAT.—Cap Rouge, Ottawa, Canada.

Type in Coll. Provancher.

Unknown to me.

A TABULAR VIEW OF THE BRED NORTH AMERICAN PROCTOTRYPIDÆ.

[The hosts in these tables followed by a query (?) indicate that the records are of questionable accuracy or that the host is doubtful.]

I. HYMENOPTERA.

<i>Parasites.</i>	<i>Hosts.</i>
<i>Cephalonomia cynipiphila</i> Ashm.	Cynipid gall, <i>Holcaspis omnivora</i> (?).
<i>gallicola</i> Ashm.	Cynipid gall, <i>Andricus foliatus</i> (?).
<i>hyalinipennis</i> Ashm.	Cynipid gall, <i>Amphibolips cinerea</i> (?).
<i>Isobrachium mandibulare</i> Ashm.	Nests of <i>Camponotus pennsylvanicus</i> .
<i>montanum</i> Ashm.	Nests of <i>Formica rufibarbis</i> .
<i>myrmecophilum</i> Ashm.	Nests of <i>Formica rufibarbis</i> .
<i>rufiventre</i> Ashm.	Nests of <i>Formica obscuripes</i> .
<i>Polygnotus eunrie</i> Ashm.	<i>Euura s. nodus</i> on willows (?).

II. DIPTERA.

<i>Aphanogmus floridanus</i> Ashm.	<i>Cecidomyia</i> sp. feeding on Red-spider.
<i>Lygocerus californicus</i> Ashm.	<i>Cecidomyia</i> sp. in galls on <i>Larrea mexicana</i> .
<i>triticeum</i> Tayl.	<i>Cecidomyia destructor</i> Say.
<i>Inostennum Horni</i> Ashm.	<i>Cecidomyiid</i> gall in blossoms of <i>Fernonia noreboracensis</i> .
<i>californica</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Telypodium integrifolium</i> .
<i>Amblyaspis minutus</i> Ashm.	<i>Cecidomyia</i> sp. in Squash.
<i>Isorhombus arizoneusis</i> Ashm.	<i>Cecidomyiid</i> gall on an unknown plant in Arizona.
<i>Polymeecus lupinicola</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Lupinus althorea</i> .
<i>cornicola</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Cornus paniculata</i> .
<i>Synopeas antennariæ</i> Ashm.	<i>Cecidomyia antennariæ</i> Wlhr.
<i>Anopedias error</i> Fitch.	<i>Diplosis tritici</i> on wheat.
<i>Trichacis rubicola</i> Ashm.	<i>Cecidomyiid</i> stem-gall on Blackberry; ditto on <i>Fernonia noreboracensis</i> .
<i>Platygaster Horrickii</i> Pack.	<i>Cecidomyia destructor</i> Say.
<i>caryæ</i> Ashm.	<i>Cecidomyiid</i> gall on Hickory.
<i>Polygnotus alnicola</i> Ashm.	<i>Cecidomyiid</i> gall from flower bud of alder.
<i>pinicola</i> Ashm.	<i>Cecidomyia pini-inopis</i> O. S. on <i>Pinus inops</i> .
<i>atriplicis</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Atriplex canescens</i> .
<i>huachuacæ</i> Ashm.	<i>Cecidomyiid</i> pod-like gall on an unknown plant in Arizona; <i>Cecidomyiid</i> stem-gall on sunflower, and a <i>Cecidomyiid</i> gall on sensitive plant.
<i>diplosidis</i> Ashm.	<i>Diplosis</i> sp. on pine.
<i>actinomeridis</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Actinomeris</i> sp.
<i>californicus</i> Ashm.	<i>Cecidomyiid</i> gall on <i>Baccharis pilularis</i> .

II. DIPTERA—Continued.

<i>Parasites.</i>	<i>Hosts.</i>
<i>Polygnotus astericola</i> Ashm	Cecidomyiid gall on aster.
<i>asynaptæ</i> Ashm	Cecidomyiid gall <i>Asynapta</i> sp.
<i>hiemalis</i> Forbes	<i>Cecidomyia destructor</i> Say, on wheat.
<i>baccharicola</i> Ashm	Cecidomyiid gall on <i>Baccharis halimifolia</i> .
<i>Platygaster aphides</i> Ashm	Aphis sp. on <i>Chenopodium album</i> (?).
<i>Eritrissomerus cecidomyiæ</i> Ashm	Cecidomyiid gall on Hickory.
<i>Polygnotus striaticeps</i> Ashm	Cecidomyiid gall on <i>Begeloria</i> or <i>Artemisia</i> sp.
<i>salicicola</i> Ashm	Cecidomyiid gall on midrib of leaves of Willow.
<i>proximus</i> Ashm	<i>Cecidomyia ananassæ</i> Riley.
<i>eurotiæ</i> Ashm	Cecidomyiid gall on <i>Eurotia canuta</i> .
<i>solidaginis</i> Ashm	Cecidomyiid gall on Solidago.
<i>viticola</i> Ashm	Cecidomyiid gall on Grape and <i>Artemisia</i> .
<i>cynipicola</i> Ashm	Cecidomyiid in Cynipid gall <i>Neuroterus batatus</i> .
<i>coloradensis</i> Ashm	Cecidomyiid gall on Sage bush.
<i>utahensis</i> Ashm	Cecidomyiid gall on <i>Artemisia tridentata</i> .
<i>rubi</i> Ashm	<i>Cecidomyia farinosa</i> on Blackberry.
<i>vernoniæ</i> Ashm	Trypeta gall on <i>Vernonia noveboracensis</i> .
<i>tumidus</i> Ashm	<i>Cecidomyia symmetrica</i> O. S. on Oak.
<i>Tropidopria conica</i> Fabr	<i>Eristalis tenax</i> .
<i>Diapria muscæ</i> Ashm	Dipterous puparia found in the ground.
<i>Phænopria hematobiæ</i> Ashm	<i>Hematobia serrata</i> .
<i>Diapria agromyzæ</i> Fitch	<i>Agromyza americana</i> Say.

III.—LEPIDOPTERA.

<i>Perisemnus prolongatus</i> Prov	<i>Crambus caliginosellus</i> .
<i>Goniozus Hubbardii</i> How	<i>Platynota rostrana</i> and <i>Platæcticus glorerii</i> .
<i>cellaris</i> Say	Geometrid larva on wheat stubble.
<i>foveolatus</i> Ashm	Tineid larva in dry fungus.
<i>Lygoceris 6-dentatus</i> Ashm	<i>Sarothripsa rawayana</i> (?)
<i>Telenomus ichthyuræ</i> Ashm	Eggs <i>Ichthyura inclusa</i> .
<i>graptæ</i> How	Eggs <i>Grapta interrogationis</i> .
	Eggs <i>Grapta progne</i> .
	Eggs <i>Tanessa antiopa</i> .
	Eggs <i>Chrysophanes hypophlaræ</i> .
	Eggs <i>Pamphila cernes</i> .
<i>gnophalæ</i> Ashm	Eggs <i>Gnophæla hopferi</i> .
<i>spilosomatis</i> Ashm	Eggs <i>Spilosoma virginica</i> .
<i>arzaumæ</i> Riley	Eggs <i>Arzama densa</i> .
<i>heliolithidis</i> Ashm	Eggs <i>Heliothis armigera</i> .
<i>lavernæ</i> Ashm	Eggs <i>Laverna luciferella</i> .
<i>Rileyi</i> How	Eggs <i>Apatura clyton</i> .
<i>clisiocampæ</i> Riley	Eggs <i>Clisiocampa americana</i> .
<i>bifidus</i> Riley	Eggs <i>Hyphantria textor</i> .
<i>Koebelei</i> Ashm	Eggs unknown, Lepidopteron on Solidago.
<i>gossypicola</i> Ashm	Eggs of a Lepidopteron on cotton.
<i>geometræ</i> Ashm	Eggs unknown, Geometrid on wild cherry.
<i>californicus</i> Ashm	Eggs <i>Orgyia</i> sp.
<i>sphingis</i> Ashm	Eggs <i>Sphinx carolina</i> .

IV. COLEOPTERA.

<i>Parasites.</i>	<i>Hosts.</i>
<i>Apenesia coronata</i> Ashm	<i>Catogenus rufus</i> under bark of <i>Cercis</i> .
<i>Cephalonomia hyalinipennis</i> Ashm	<i>Hypothenemus eruditus</i> in fig twigs.
<i>Anoxus Chittendeni</i> Ashm	From <i>Cis fuscipes</i> living in fungus.
<i>Ateleopterus tarsalis</i> Ashm	<i>Silvanus surinamensis</i> in raisins and in stored grain.
<i>Laelius trogodermais</i> Ashm	Larva of <i>Trogoderma tarsale</i> .
<i>Proctotrypes obsoletus</i> Say	<i>Stelidota strigosa</i> .
<i>Macroteleia floridana</i> Ashm	From stems of timothy infested with <i>Languria</i> (?)
<i>Proscantha carborum</i> Riley	Eggs of <i>Chlanius impunctifrons</i> .
<i>Ceraphron salicicola</i> Ashm	Bred from old willow wood which was partially covered with fungus and infested with Coleopterous larvæ (?).
<i>Trichacis rufipes</i> Ashm	From acorns infested with <i>Balaninus nasicus</i> (?).

V. ORTHOPTERA.

<i>Cacus æcanthi</i> Riley	Eggs (<i>Ecanthus nireus</i> and <i>E. latipennis</i>).
<i>Baryconus æcanthi</i> Riley	Eggs (<i>Ecanthus nireus</i>).
<i>Scelio ovivora</i> Riley	Eggs <i>Dissosteira carolina</i> .
<i>caloptani</i> Riley	Eggs <i>Caloptenus atlantis</i> .
<i>Luggeri</i> Riley	Eggs <i>Caloptenus</i> sp.
<i>Macroteleia floridana</i> Ashm	Eggs <i>Orchelimum glaberrimum</i> .

VI. HEMIPTERA.

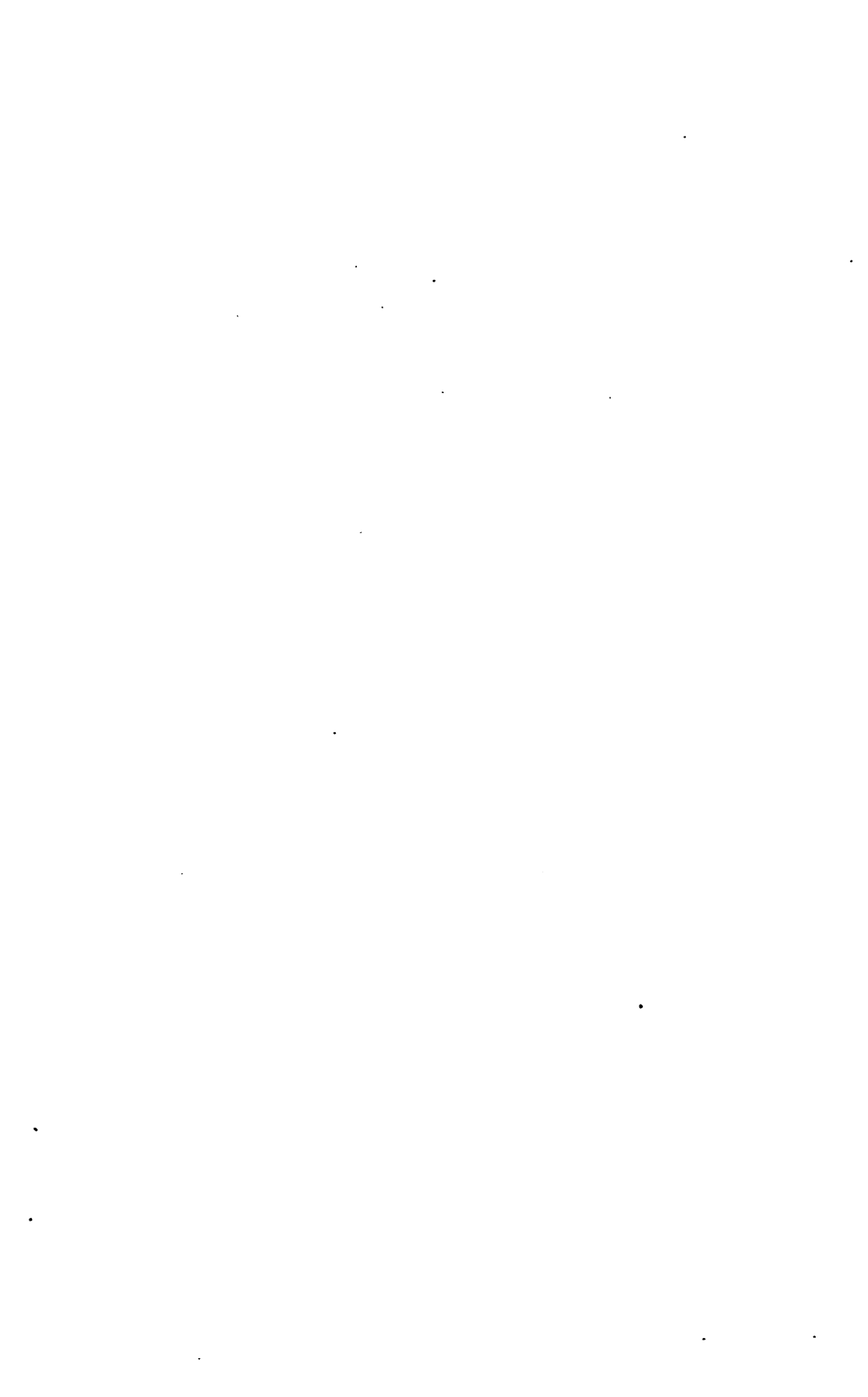
<i>Labeco typhlocybe</i> Ashm	<i>Typhlocybe</i> sp. on <i>Celtis</i> and <i>Elm</i> .
<i>Lygocerus niger</i> How	<i>Siphonophora ævena</i> .
<i>floridanus</i> Ashm	<i>Lachnus australis</i> .
<i>Aphanogmus floridanus</i> Ashm	From twigs containing eggs of <i>Cicada septendecim</i> (?)
<i>Phanurus ovivorus</i> Ashm	Heteropterous eggs.
<i>Telenomus podisi</i> Ashm	Eggs <i>Podisus modestus</i> .
<i>Hubbardii</i> Ashm	Eggs of a Reduviid.
<i>persimilis</i> Ashm	Eggs of an unknown Hemipteron.
<i>Triissolcus podisi</i> Ashm	Eggs <i>Podisus spinosus</i> .
<i>enschisti</i> Ashm	Eggs <i>Enschistus servus</i> .
<i>brochymena</i> Ashm	Eggs <i>Brochymena arborea</i> .
<i>murgantia</i> Ashm	Eggs <i>Murgantia histrionica</i> .
<i>Hadronotus floridanus</i> Ashm	Eggs <i>Metapodius femoratus</i> .
<i>leptocorisæ</i> How	Eggs <i>Zelus bilobus</i> .
<i>largi</i> Ashm	Eggs <i>Largus succinctus</i> .
<i>rugosus</i> How	Eggs <i>Euthoctha galator</i> .
<i>anasa</i> Ashm	Eggs <i>Anasa tristis</i> .
<i>Amitus aleuroclinis</i> Hald	<i>Aleurodes aceris</i> and <i>A. corni</i> .

VII. NEUROPTERA.

<i>Telenomus chrysopæ</i> Ashm	Eggs <i>Chrysopa</i> sp.
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VIII. ARACHNIDA.

<i>Acoloides saitidis</i> How	Eggs <i>Saitis pulex</i> .
	Eggs <i>Phydippus morisiana</i> .
<i>Emertonii</i> How	Eggs of an unknown spider.
<i>Acolus Zubriskiei</i> Ashm	Eggs of an unknown spider.
<i>Bæus americanus</i> How	Eggs of an Epeirid.



LITERATURE AND ABBREVIATIONS.

A.

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EXPLANATION TO PLATES.

PLATE I.

- FIG. 1. *Epyris grandis*.—H, Head: *r*, vertex; *o*, ocelli; *oc*, occiput; *g*, gena, or cheek; *f*, face; *e*, eye; *cl*, clypeus; *a*, antenna; *sc*, scape; *p*, pedicel; *f*, flagellum; *mzp*, maxillary palpi; *lbp*, labial palpi; *m*, mandibles. T, Thorax: *pt*, prothorax; *c*, collar; *pn*, pronotum; *p*, propleuron; *psm*, prosternum; *sp*, spiracles; *ms*, mesoscutum; *pf*, parapsidal furrows; *p*, parapsides, or scapulae; *s*, mesoscutellum or scutellum; *ax*, axilla; *mpe*, mesopostscutellum; *tg*, tegula, or wing scale; *mp*, mesopleuron; *msm*, mesosternum; *ep*, episternum; *mtt*, metathorax; *mn*, metanotum; *sp*, spiracles; *mtp*, metapleuron; *ihw*, insertion of hind wings. A, Abdomen: 1, 2, 3, 4, 5, 6, 7, and 8, dorsal segments or tergites, number 1 usually designated as the petiole; 2, 3, 4, 5, and 6, urites, or ventral segments; *t* or *sh*, sheaths conjoined, forming a tube for the terebra (*tba*), or ovipositor proper; *spc*, spiculae; *cx*, *cx*, *cx*, coxae; *tr*, *tr*, *tr*, trochanters (1-jointed); *fr*, *fr*, *fr*, femora; *ta*, *ta*, *ta*, tibiae; *tbs*, tibial spur, the middle and posterior tibiae being 2-spurred; *ts*, tarsi; *cl*, claws; *pr*, pulvillus.
2. *Maxilla*: *mr*, maxilla; *s*, stipes; *c*, cardo; *pfr*, palpifer; *mzp*, maxillary palpi; *ga*, galea; *la*, lacinia.
 3. *Labium*: *plg*, palpiger; *lp*, labial palpi.
 4. *Front wing of Pristocera atra* Klug.—*C*, costal nervure; *sc*, subcostal or submarginal nervure; *m*, median nervure; *sm*, submedian or anal nervure; *st*, stigma, or marginal nervure *stigmated*; *r*, radius, or radial nervure; *cbl*, cubital nervure; *sd*, subdiscoidal nervure; *b*, basal nervure; *tm*, transverse median nervure; *d*, first recurrent nervure; *sr*, second recurrent nervure; *fte*, first transverse cubital nervure; *stc*, second transverse cubital nervure. *Cells*: 1, costal; 2, first basal; 3, second basal; 4, anal; 5, marginal or radial; 6, first discoidal; 7, second discoidal; 8, third discoidal; 9, first submarginal; 10, second submarginal; 11, third submarginal; 12, first apical; 13, second apical.
 5. *Hind wing of Belyta*: *sc*, costal and subcostal united at base; *m*, median nervure; *st*, stigma with hooks; *b*, basal nervure; *cbl*, cubital. *Cells*: 1, costal cell (open); 2, basal; 3, anal.
 6. *Ovipositor of Proctotrypes caudatus* Say: *shs*, sheaths conjoined, very long and curved at tip; *tba*, terebra, or ovipositor proper; *bp*, basal plates; *spc*, spiculae; *spl*, basal lobes of spiculae.
 7. *Ovipositor of Epyris grandis* (external view): *shs*, sheaths; *tba*, terebra, or ovipositor proper, with the two spiculae (*spc*).
 8. *The same* (internal view): *shs*, sheaths or tube; *tba*, ovipositor proper; *spc*, spiculae, base and apex; *bp*, basal plates.
 9. *Cross section of same*: A, a section from near the base; B, from near the tip.
 10. *Male genitalia of Epyris carbonarius*: A, viewed from above; *p*, penial sheath, strongly exerted; *o*, orifice of penis; *us*, upper sheath or plate; *ls*, lower sheath. B, viewed from beneath: *us*, upper sheath; *ls*, lower sheath; *p*, penis; *pc*, penial claspers; *bl*, swollen basal lobes or plates, to which the sheaths are attached.

- FIG. 11. *Male genitalia of Proctotrypes caudatus* (side view, with right ventral spine removed): *rs*, left ventral spine, or outer sheath; *us*, upper sheath; *ls*, lower sheath.
12. *Male genitalia of Scleroderma cylindricus* Westw. (after Westwood): *us*, upper sheaths; *ls*, lower sheaths.
13. *Oripodator of Scleroderma ephippium* (after Westwood): *dd*, spiculae; *b*, recurved bases of spiculae; *ff*, muscular angulated lobe or catch; *ce*, membranous plates.

PLATE II.

- FIG. 1. *Pristocera atra* Klug ♂.
 2. *Pristocera atra* Klug ♀.
 3. *Isobrachium myrmecophilum* Ashm. ♀.
 4. *Isobrachium myrmecophilum* Ashm. ♀.
 5. *Scleroderma* sp. ♂.
 6. *Scleroderma macrogaster* Ashm. ♀.
 7. *Diassomphalus xanthopus* Ashm. ♂.
 8. *Diassomphalus xanthopus* Ashm. ♀.

PLATE III.

- FIG. 1. *Ateleopterus virginienensis* Ashm. ♂.
 2. *Ateleopterus virginienensis* Ashm. ♀.
 3. *Apensia coronata* Ashm. ♂.
 4. *Apensia amazonica* Westw. ♀.
 5. *Cephalonomia hyalinipennis* Ashm. ♂.
 6. *Cephalonomia gallicola* Ashm. ♀.
 7. *Laelius nigripilosus* Ashm. ♀.
 8. *Bethylus pedatus* Say ♀.

PLATE IV.

- FIG. 1. Front wing of *Eupsenella agilis* Westw. ♂.
 2. Front wing of *Sierola* (?) *ambigua* Ashm. ♂.
 3. *Calyoza staphylinoides* Westw. ♂.
 4. *Epiris columbianus* Ashm. ♂.
 5. *Mesitius ranconverensis* Ashm. ♀.
 6. *Anoxus Chittendenii* Ashm. ♂.
 7. *Periscenus floridanus* Ashm. ♀.
 8. *Goniozus platynotus* Ashm. ♀.

PLATE V.

- FIG. 1. *Ampulicomorpha confusa* Ashm. ♂.
 2. *Embolemus Ruddii* Westw. ♂.
 3. *Dryinus americanus* Ashm. ♀.
 4. *Gonatopus flavifrons* Ashm. ♀.
 5. *Labco typhlocyba* Ashm. ♂.
 6. *Bocchus flavicollis* Ashm. ♀.
 7. *Phorbas laticeps* Ashm. ♂.

PLATE VI.

- FIG. 1. *Chelogyne canadensis* Ashm. ♀.
 2. *Anteon politus* Ashm. ♀.
 3. *Aphelopus melaleucus* Dahm. ♀.
 4. *Habropelte armatus* Say ♂; *a*, head of ♀.

- FIG. 5. *Trichostereus floridanus* Ashm. ♀.
 6. *Eumegaspilus erythrothorax* Ashm. ♀; a, head of ♂.
 7. *Megaspilus striatipes* Ashm. ♀; a, head of *M. californicus* ♂.
 8. *Lygocerus 6-dentatus* Ashm. ♂; a, head of ♀.
 9. *Atritonus americanus* Ashm. ♂.
 10. *Lagynodes minutus* Ashm. ♀; a, head of ♂.

PLATE VII.

- FIG. 1. *Aphanogmus varipes* Ashm. ♀; a, head of *A. niger* Ashm. ♂.
 2. *Ceraphron punctatus* Ashm. ♀; a, head of ♂.
 3. *Neoceraphron macroneurus* Ashm. ♂; a, head of ♀.
 4. *Trinorus americanus* Ashm. ♂.
 5. *Phanurus floridanus* Ashm. ♀.
 6. *Trissolcus brochymenæ* Ashm. ♀.
 7. *Telenomus sphingis* Ashm. ♀; a, ♂ antenna.
 8. *Dissolcus nigricornis* Ashm. ♀.
 9. *Aradophagus fasciatus* Ashm. ♀.

PLATE VIII.

- FIG. 1. *Pentacantha canadensis* Ashm. ♀; a, abdomen, viewed from the side.
 2. *Trissacantha americana* Ashm. ♂.
 3. *Xenomerus ergenna* Walk. ♂.
 4. *Proscantha caraborum* Riley ♀; a, ♂ antenna.
 5. *Teleas pallidipes* Ashm. ♂; a, ♂ antenna of *T. coxalis* Ashm.
 6. *Hoplogryon longipennis* Ashm. ♀; a, ♂ antenna of *H. solitarius* Ashm.
 7. *Gryon borealis* Ashm. ♀.
 8. *Ceratobæus cornutus* Ashm. ♀.
 9. *Bæus americanus* How.; a, ♀; b, winged ♂.

PLATE IX.

- FIG. 1. *Caloteleia Heidemanni* Ashm. ♀; a, ♂ antenna.
 2. *Baryconus acanthi* Riley ♀.
 3. *Chromoteleia semicyanea* Ashm. ♀; a, ♂ antenna.
 4. *Opisthacantha mellipes* Ashm. ♀; a, side view of body; b, ♂ antenna.
 5. *Bæoneura bicolor* Ashm. ♀.
 6. *Macroteleia floridana* Ashm. ♀; a, ♂ antenna of *M. macrogaster* Ashm.
 7. *Calliscelio laticinctus* Ashm. ♀; a, ♂ antenna.
 8. *Lapitha spinosa* Ashm. ♂.

PLATE X.

- FIG. 1. *Hoploteleia floridana* Ashm. ♂.
 2. *Anteris nigriceps* Ashm. ♀; a, ♂ antenna.
 3. *Cremastobæus bicolor* Ashm. ♀; a, ♂ antenna.
 4. *Hadronotus insularis* Ashm. ♀; a, ♂ antenna.
 5. *Idris vneæ* Ashm. ♀.
 6. *Acanthoscelio americanus* Ashm. ♂.
 7. *Sparasion pilosum* Ashm. ♀.
 8. *Scelioromorpha longicornis* Ashm. ♂.
 9. *Scelio hyalinipennis* Ashm. ♀; a, ♂ antenna; u, wing of *S. fuscipennis* Ashm.

PLATE XI.

- FIG. 1. *Iphetrachelus americanus* Ashm. ♂.
 2. *Allotropia americana* Ashm. ♀; a, ♂ antenna.
 3. *Metactisis belonocneme* Ashm. ♀.

- FIG. 4. *Monocrita carinata* Ashm. ♀; a, ♂ antenna.
 5. *Isostasius musculus* Ashm. ♀.
 6. *Inostemma Cressoni* Ashm. ♀.
 7. *Acerola carya* Ashm. ♂; a, ♀ antenna.
 8. *Picstopleura catillus* Walk. ♀.
 9. *Xestonotus andriciphilus* Ashm. ♀.
 10. *Amblyaspis longipes* Ashm. ♂; a, ♀ antenna.

PLATE XII.

- FIG. 1. *Leptacis rugiceps* Ashm. ♀; a, ♂ antenna.
 2. *Isorhombus hyalinipennis* Ashm. ♂; a, ♀ antenna.
 3. *Polymecus pallipes* Ashm. ♀; a, ♂ antenna.
 4. *Sactogaster Howardii* Ashm. ♀; a, ♂ antenna of *S. anomaltrentivris* Ashm.
 5. *Synopeas rufipes* Ashm. ♀; a, ♂ antenna.
 6. *Catopelta mirabilis* Ashm. ♂.
 7. *Anopedias error* Fitch ♀; a, ♂ antenna.
 8. *Amitus aleurodinis* Hald. ♀; a, ♂ antenna.
 9. *Trichactis rufipes* Ashm. ♀; a, ♂ antenna.
 10. *Hypocampeis plato* Ashm. ♀.

PLATE XIII.

- FIG. 1. *Eritrisomerus occidomyia* Ashm. ♀; a, ♂ antenna.
 2. *Polygnotus baccharicola* Ashm. ♀; a, ♂ antenna.
 3. *Platygaster floridensis* Ashm. ♀; a, ♂ antenna.
 4. *Isocybus pallipes* Say ♀; a, ♂ antenna.
 5. *Holorus paradoxus* Prov. ♀.
 6. *Disognus areolator* Hal. ♀.
 7. *Proctotrypes caudatus* Say ♀; a, ♀ abdomen, viewed from the side; b, ♂ abdomen; c, ♂ antenna.
 8. *Codrus apterognus* Hal. ♀.

PLATE XIV.

- FIG. 1. *Leptorhaptus conicus* Ashm. ♀; a, ♂ abdomen; b, ♂ antenna.
 2. *Miota glabra* Ashm. ♀.
 3. *Acropiella flavicauda* Ashm. ♀.
 4. *Belyta frontalis* Ashm. ♀.
 5. *Oxylabis spinosus* Prov. ♀.
 6. *Cinctus mellipes* Say ♀.
 7. *Xenotoma mandibularis* Ashm. ♀.

PLATE XV.

- FIG. 1. *Zelotypa longicornis* Ashm. ♂.
 2. *Pantoclis analis* Ashm. ♀; a, ♂ antenna of *P. californica* Ashm.
 3. *Zygota americana* Ashm. ♂; a, front tibia.
 4. *Aclista rufopetiolata* Ashm. ♀.
 5. *Psilomma columbianum* Ashm. ♀; a, ♂ antenna.
 6. *Ismarus rugulosus* Först. ♂; ♀ antenna.
 7. *Acolus Zabriskiei* Ashm. ♂.
 8. *Anectata kirtifrons* Ashm. ♀.

PLATE XVI.

- FIG. 1. *Pantolyta brunnea* Ashm. ♀.
 2. *Polypeza Pergandei* Ashm. ♀.
 3. *Thoron pallipes* Ashm. ♀.

- FIG. 4. *Hemilexis submarginatus* Ashm. ♀ ; a, ♂ antenna.
 5. *Paramesius pallidipes* Ashm. ♀ .
 6. *Cacus acanthi* Riley ♀ .
 7. *Spilomicrus armatus* Ashm. ♀ ; a, ♂ antenna of *S. flavicornis*.
 8. *Hemilerodes floridana* Ashm. ♀ ; a, ♂ antenna of another species.

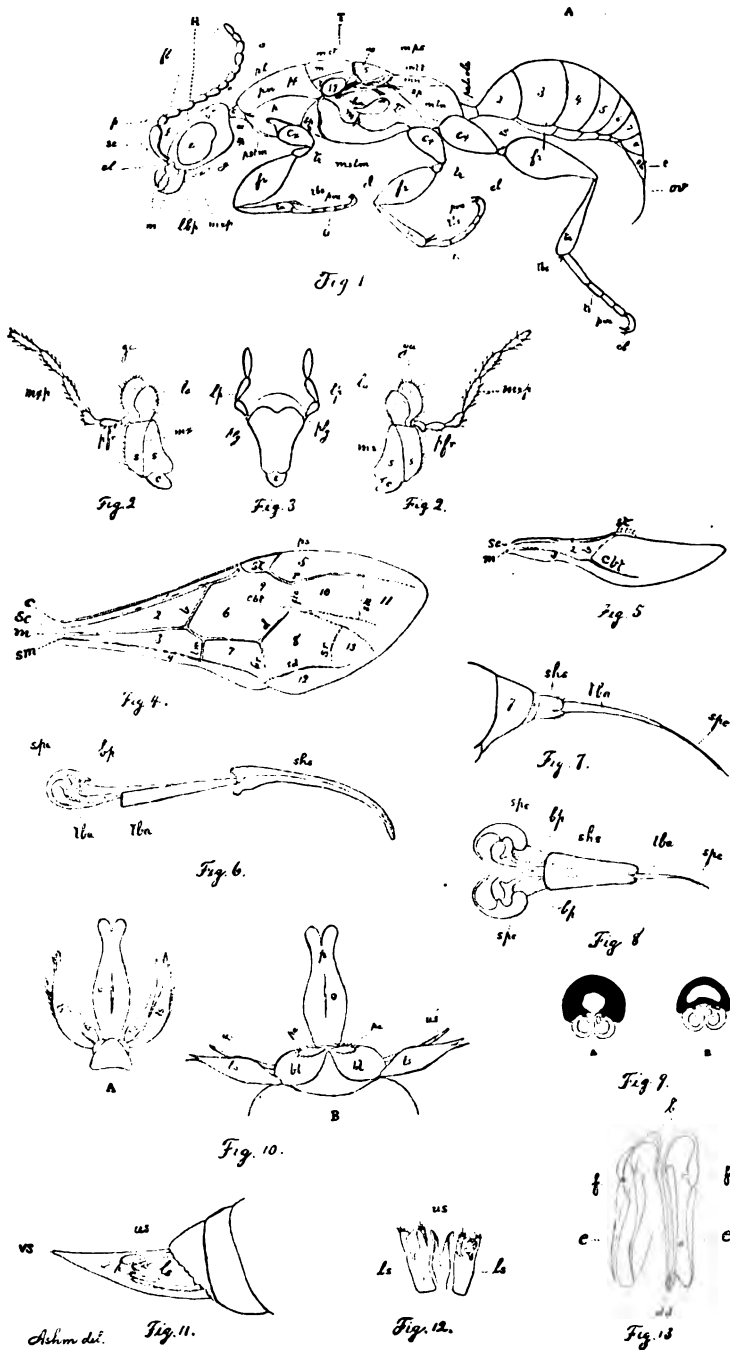
PLATE XVII.

- FIG. 1. *Glyptonota nigriclata* Ashm. ♀ .
 2. *Tropidopsis clavatus* Ashm. ♀ ; a, ♂ antenna.
 3. *Idiotypa pallida* Ashm. ♀ ; a, ♂ antenna.
 4. *Aneurhynchus floridanus* Ashm. ; a, ♂ antenna.
 5. *Labolips innupta* Hal. ♀ .
 6. *Galeus 6-punctatus* Ashm. ♀ ; a, ♂ antenna.
 7. *Platymischus dilatatus* Westw. ♂ .
 8. *Loxotropa ruficornis* Ashm. ♀ ; a, head and antennae of ♂ .

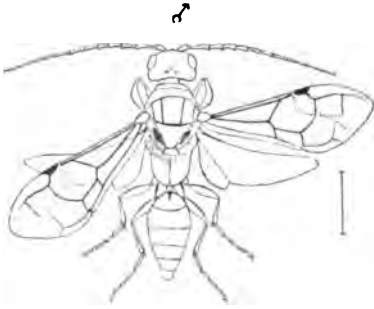
PLATE XVIII.

- FIG. 1. *Tropidopria conica* Latr. ♀ .
 2. *Diapria californica* Ashm. ♀ ; a, ♂ antenna.
 3. *Ceratopria infuscatipes* Ashm. ♀ .
 4. *Trichopria rufipes* Ashm. ♀ ; a, ♂ antenna.
 5. *Phanopria virginica* Ashm. ♂ ; a, ♀ antenna.
 6. *Monelata mellicollis* Ashm. ♀ ; a, ♂ antenna.
 7. *Basalys californica* Ashm. ♂ ; a, ♀ antenna.
 8. *Myrmecopria mellea* Ashm. ♀ .

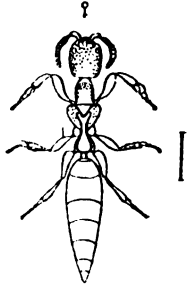




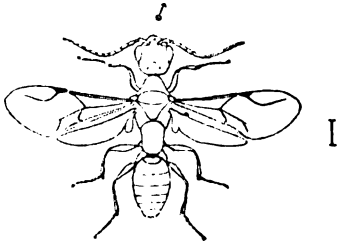
NORTH AMERICAN PROCTOTRYPIDÆ.



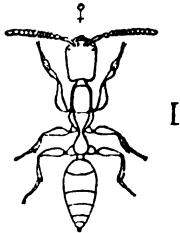
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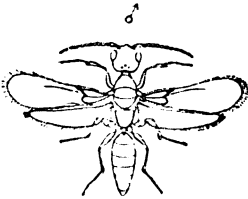
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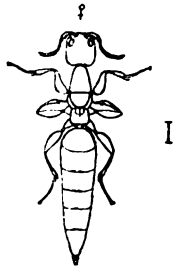
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4 ISOBRACHIUM-FOGET



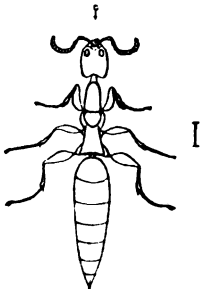
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6 SCLERODERMA-WESTER

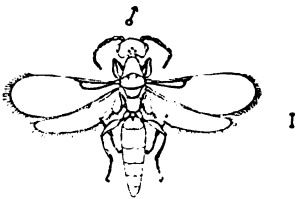


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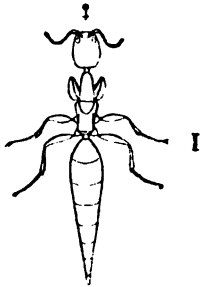


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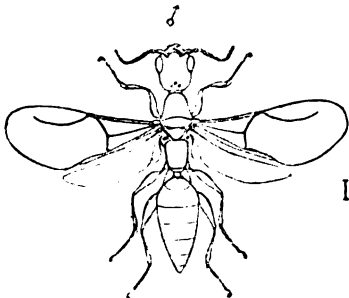
Ashm. del



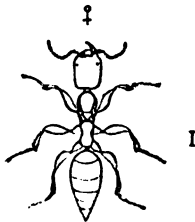
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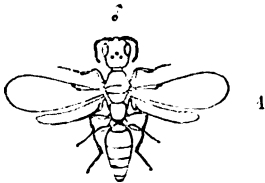
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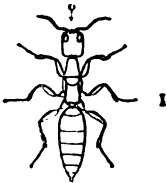
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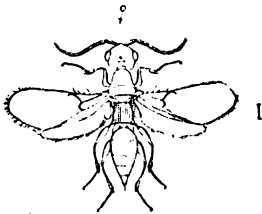
4 APENESIA-WESTW.



5 CEPHALONOMIA-WESTW.

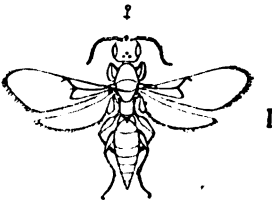


6 CEPHALONOMIA-WESTW.



Ashm. del.

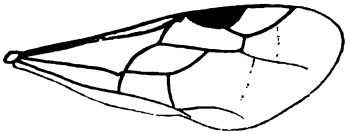
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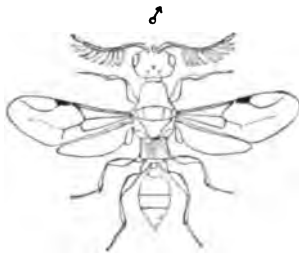
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1 EUPHENELLA-WESTW



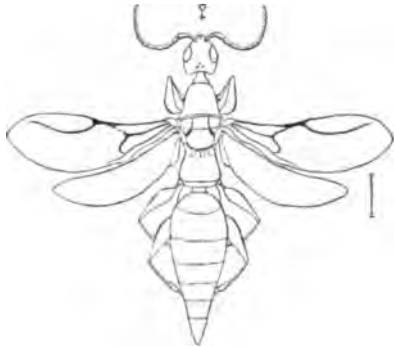
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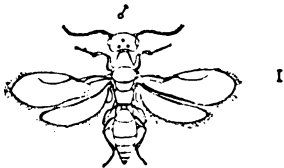
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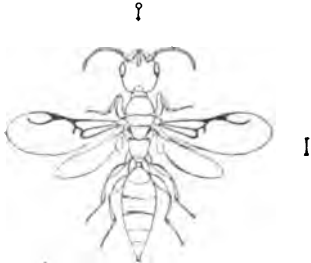
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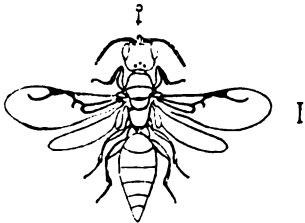
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6 ANOXUS-Tomas



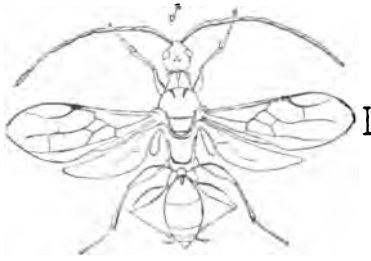
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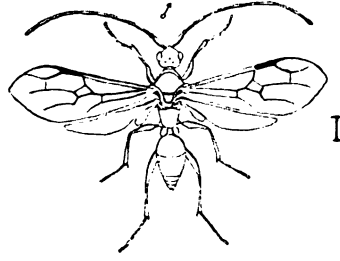
8 GONIOZUS-FORSK

Stichm del

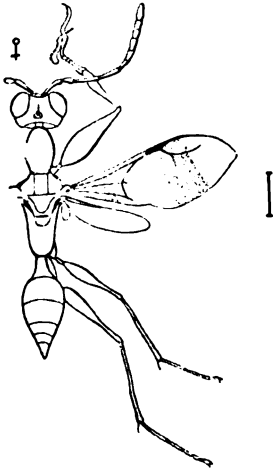




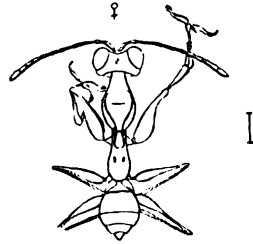
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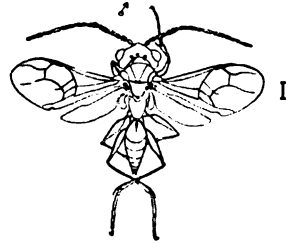
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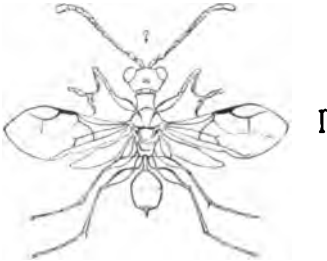
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4 GONITOPUS—Latre.



5 LABES—Mn.

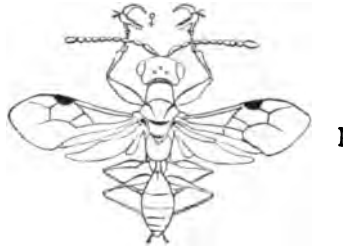


6 BOCCUS—Amm.

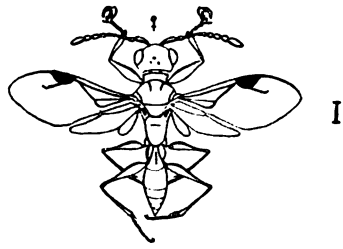


7 PHORBAS—Amm.

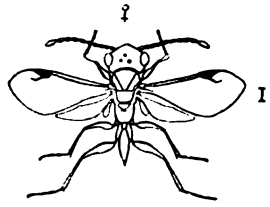
A. Schm. del.



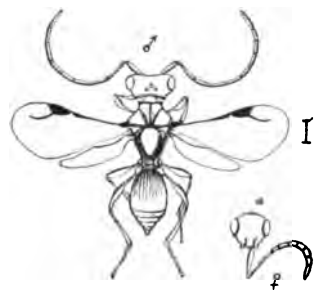
1 CHEILODYSMUS-MEX.



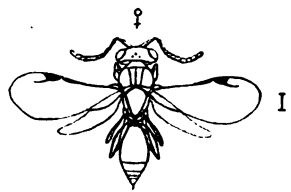
2 ANTEON-JAMAЕ.



3 APHEOPUS-DUCK.



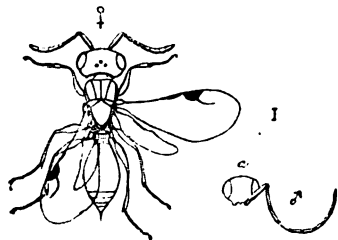
4 HARPEDELTO-THOM.
♀



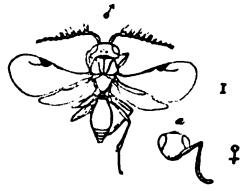
5 TRICHOSTERES-FOREL.



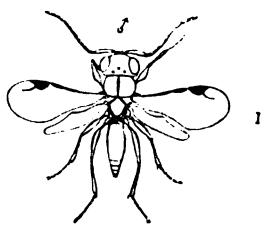
6 EUMEGASPILUS-ADM.



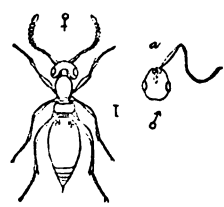
7 MEGASPILUS-FOREL.



8 LYOCERUS-FOREL.



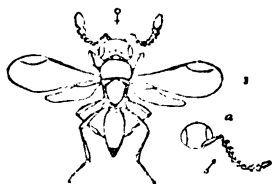
9 ATRITONUS-FOREL.



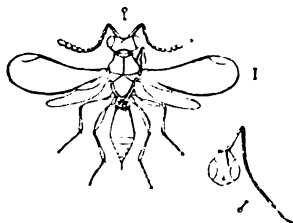
10 LADYHOODS-FOREL.

Stål del





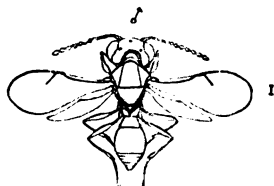
1 APHANOGETUS—Tonn



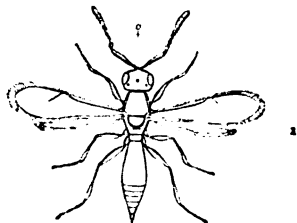
2 CERAPHRON—Juss



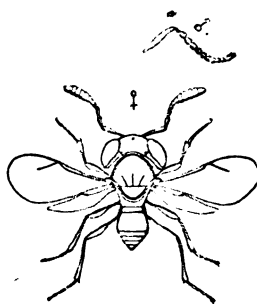
3 NEOCERAPHRON—Amm



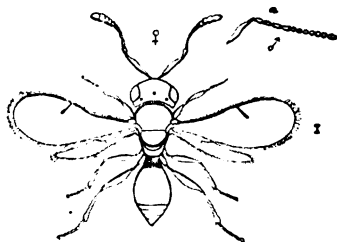
4 TRIMORUS—Forsk



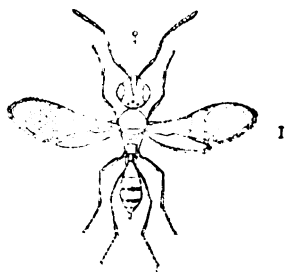
5 PHANURUS—Tonn



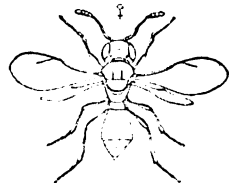
6 TRISSOLCUS—Amm



7 TELENOMUS—Hal



8 ARADOPHAGUS—Amm



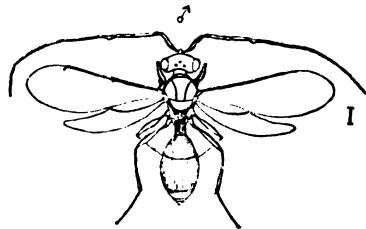
9 DISOCYS—Amm

Aslem del.

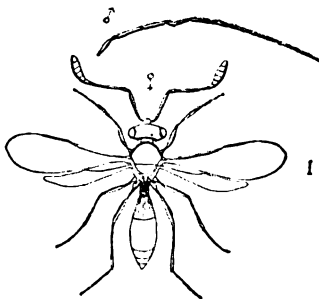




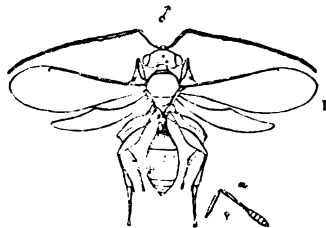
1 PENTACANTHA-Adm.



2 TRISSACANTHA-Adm.



4 PROSACANTHA-Rees

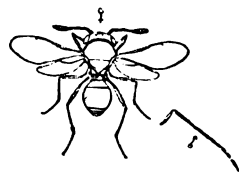


Ashm del

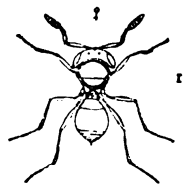
5 TELEAS-Laf.



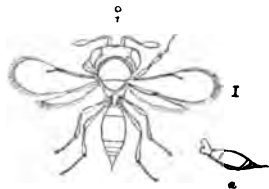
3 KENOMERUS-Wal.



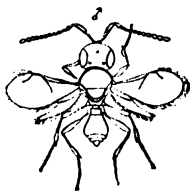
6 HOPLOGRYON-Adm.



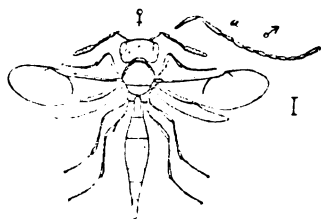
7 GRYON-Ma.



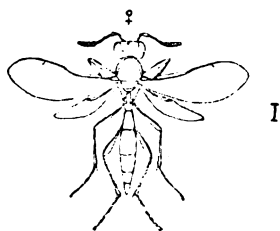
8 CERATORHUS-Adm.



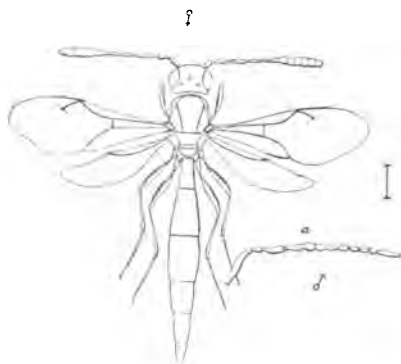
9-10-MA.



1 CALOTELEIA-WESTW.



2 BARYCONUS-F. det.



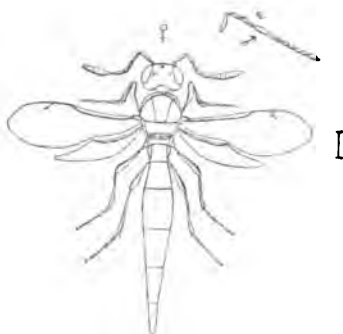
3 CALOTELEIA-WESTW.



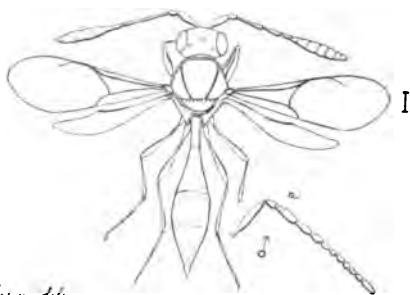
4 OPISTHAESTERUS-A.



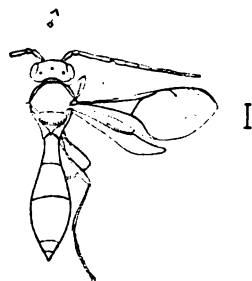
5 BRACHNEURA-F. det.



6 MACROTELEIA-WESTW.

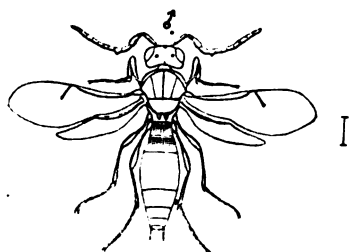


7 CALLUSCELO-A.

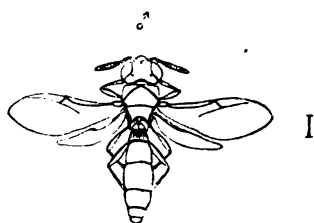


8 LAPITHA-A.

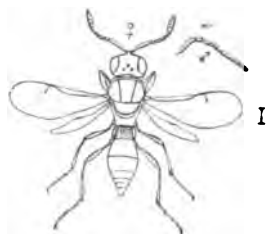
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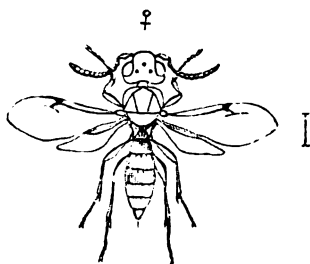
1 HOPOPLELA—Adams



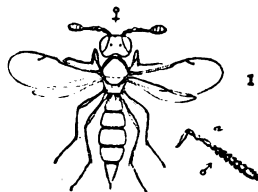
6 ACANTHORCELIO—Adams



2 ANTERIS—Först



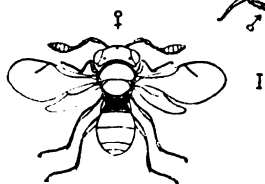
7 SPARABON—Adams



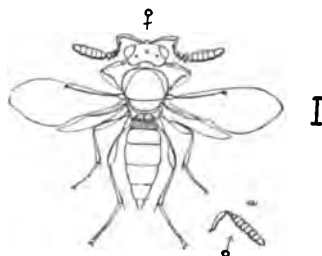
3 CREMASTOBÆUS—Adams



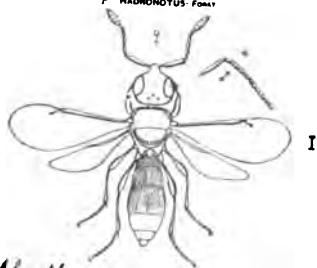
8 SCHELMORPHA—Adams



4 HADRONOTUS—Först

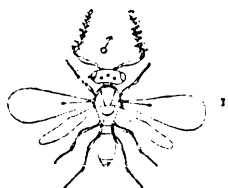


7 SCHELIO—Laticollis



5 IDRIA—Först

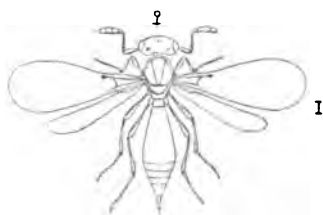
Adams, del.



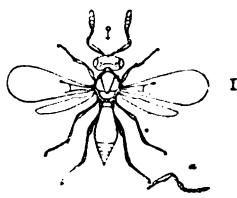
1 IPHETRACHELUS-MAL



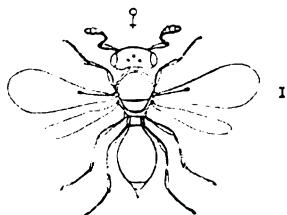
2 ALLOTROPA-FORS



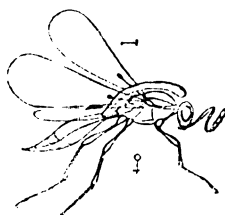
3 METACELIS-FORS



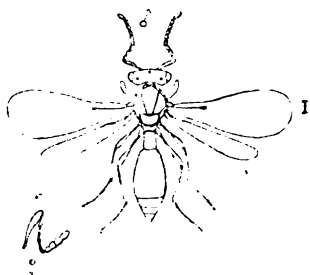
4 MONOCRYPUS-FORS



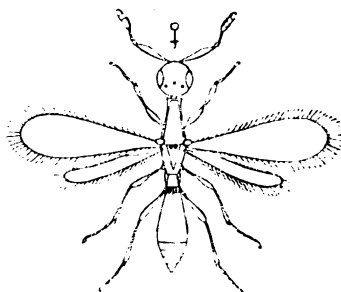
5 ISOTASTUS-FORS



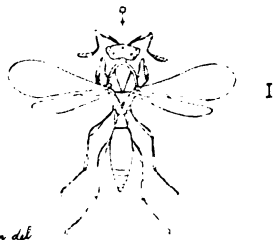
6 HOSTEMMA-MAL



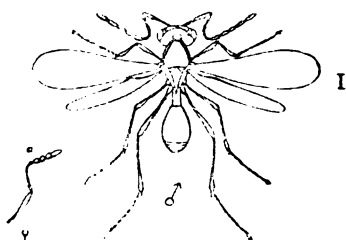
7 ACEROTA-FORS



8 PESTOPELVA-FORS

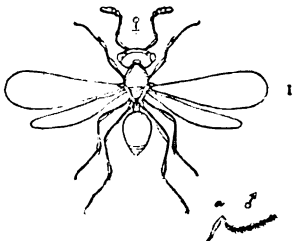


9 RELUCTUS-FORS

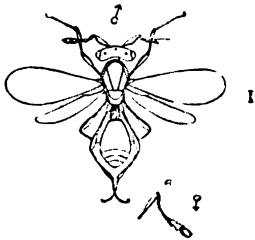


10 AMBLYASTUS-FORS

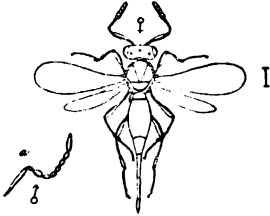
Chen del



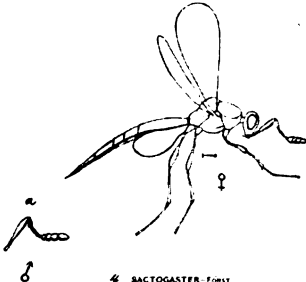
1 LEPTACIS-FÖRST.



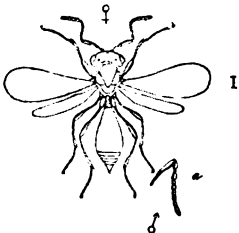
2 RORHOMBUS-FÖRST.



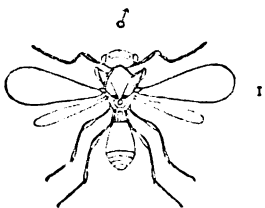
3 POLYMECUS-FÖRST.



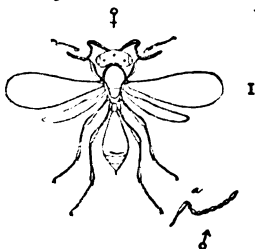
4 SACTOGASTER-FÖRST.



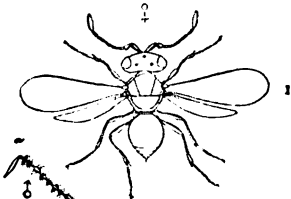
5 SYNOPEAS-FÖRST.



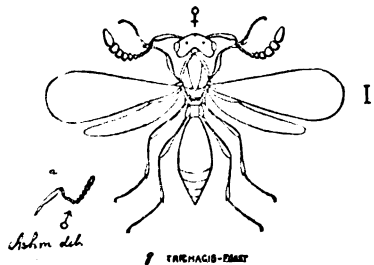
6 CŒLOPECTA-ASHM.



7 ANOPEDIAS-FÖRST.



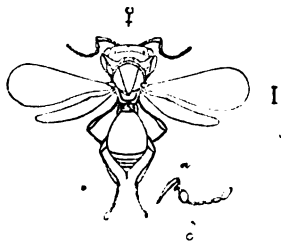
8 AMITUS-HALD.



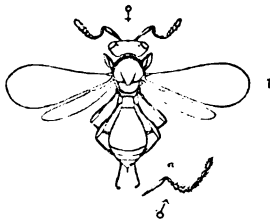
9 TARCHACIS-FÖRST.



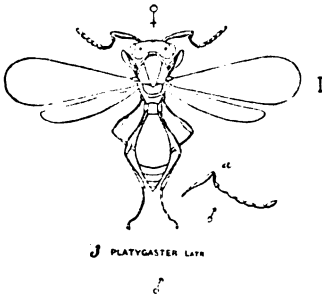
10 HYPOCAMPUS-FÖRST.



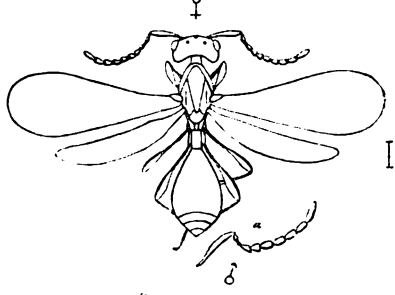
1 ERITRISOMERUS-Ashme



2 POLYODONTUS-Ford



3 PLATYGASTER-LATR.



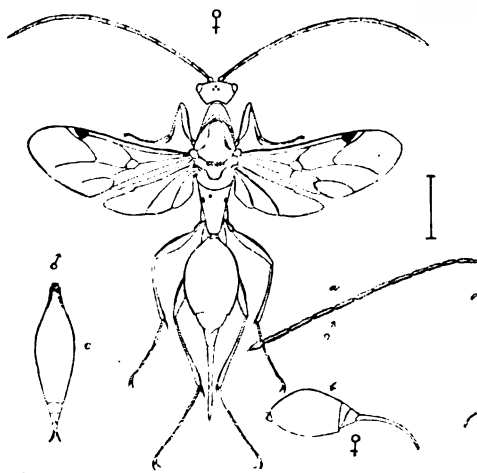
4 ISOCTYRUS-Ford



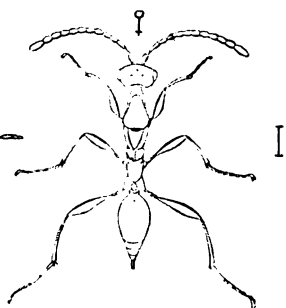
5 MELORUS-LATR.



6 OISOGNUS-Ford



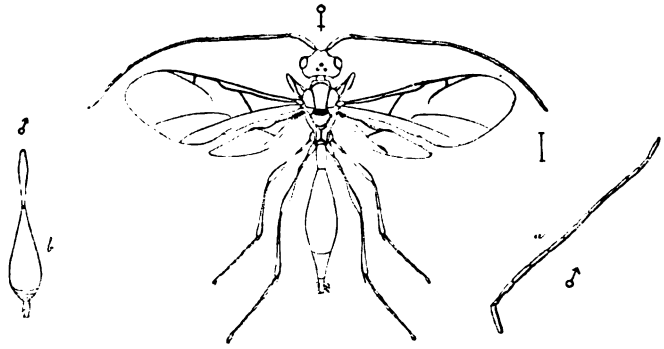
7 PROCTOTRYPES-LATR.



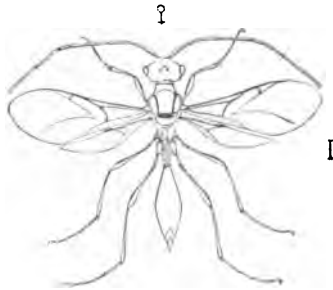
8 CORDUS-Jung.

Aspilota del.

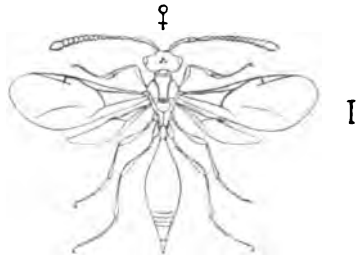
NORTH AMERICAN PROCTOTRYPIDÆ.



1 LEPTORMAPTUS-FORSY.



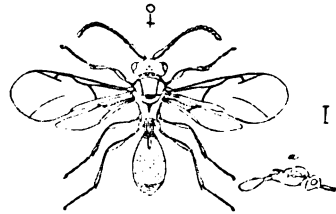
2 MIOTA-FORSY.



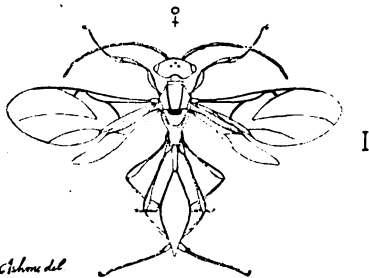
3 ACROPIESTA-FORSY.



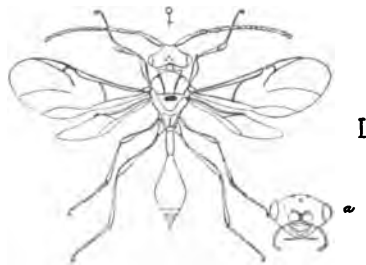
4 RELVA-JUANE



5 OXYLABIS-FORSY.

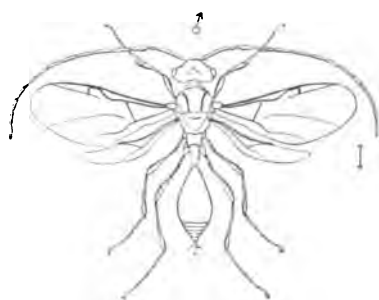


6 CINETUS-JUANE.

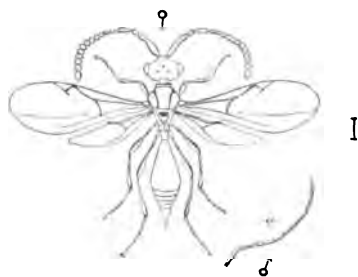


7 XENOTOMA-FORSY.

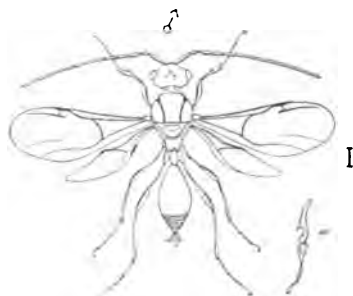
Johnson del.



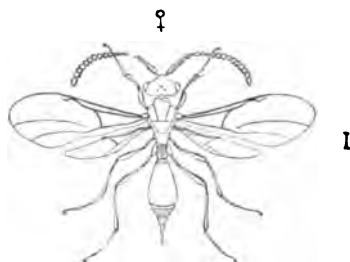
1 ZELOTYPE-FORST.



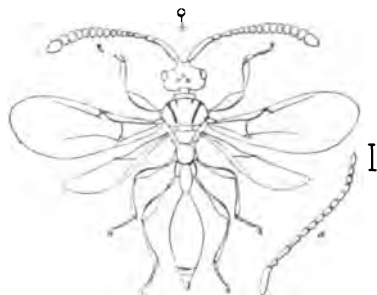
2 PANTOCLIS-FORST



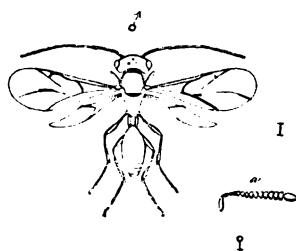
3 ZYGOTA-F.-V.



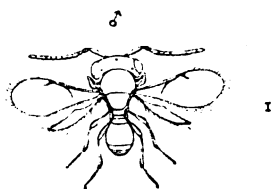
4 ACLISTA-FORST



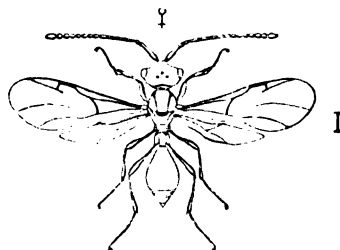
5 PSODOVA-FORST.



6 ISMARUS-MIL.

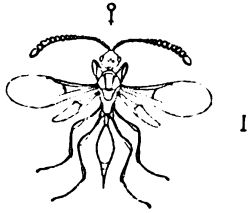


7 ACOLUS-FORST

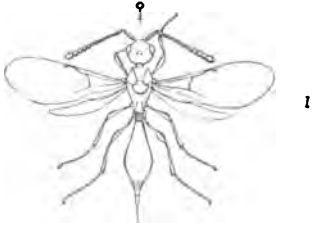


8 ANECTATA-FORST

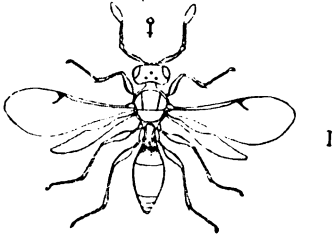
Arthur del



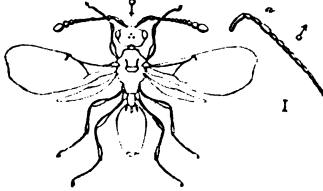
1 PANTOLYTA-FORSK.



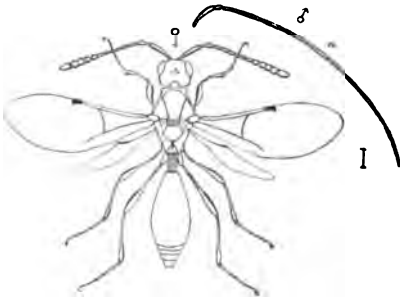
2 POLYPEZA-FORSK.



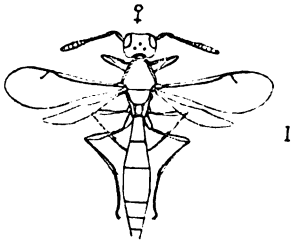
3 THORON-HAL.



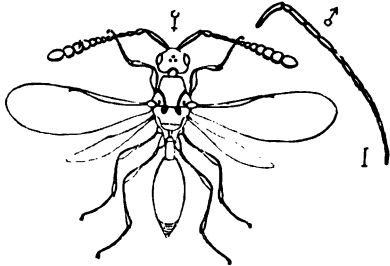
4 HEMILEXIS-FORSK.



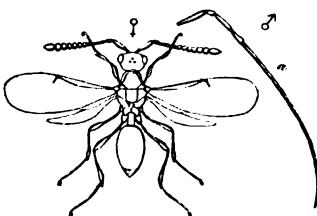
5 PARAMESIUS-WLSTH.



6 CACUS-ROXY.

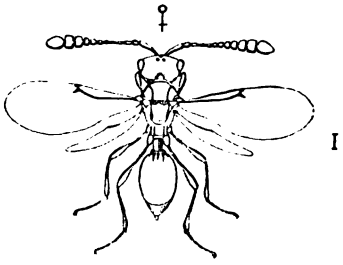


7 EPILONICRUS-WLSTH.

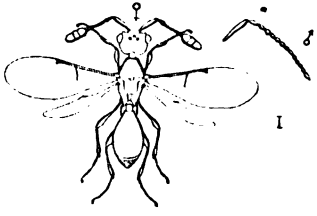


8 HEMILEXODES-AMM.

Antenn. del.



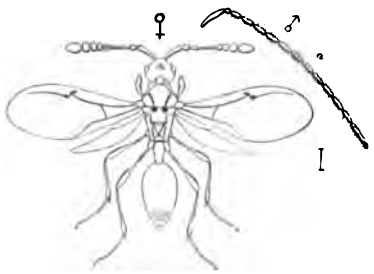
1 GLYPTOMOTA - Fernald



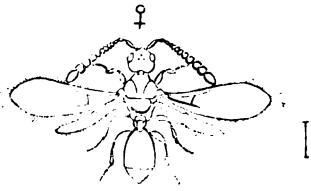
2 TROPIDOPSIS - Ashmead



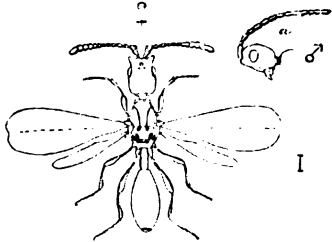
3 IDIOTYPA - Fernald



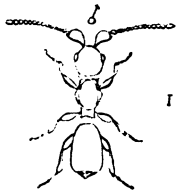
4 ANEURHYNCHUS - Westwood



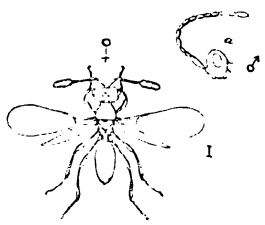
5 LABOLIPS - Haliday



6 GALESUS - Curtis

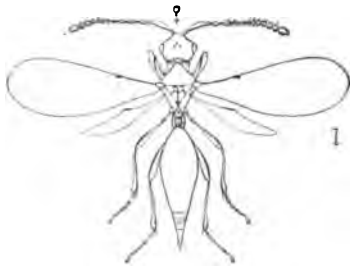


7 PLATYNICHNUS - Westwood

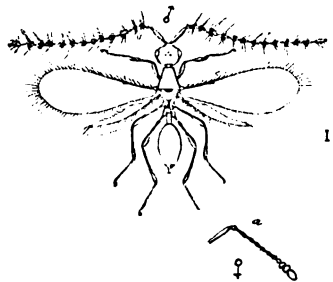


8 LOXOTROPA - Fernald

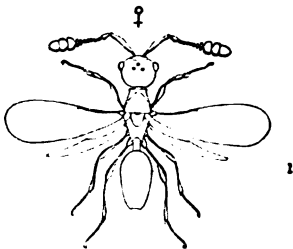
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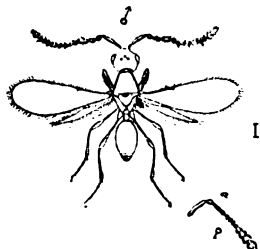
1 TROPIDOPRIA-Adm.



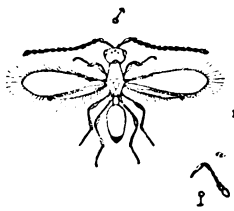
2 DIAPRIA-Lat.



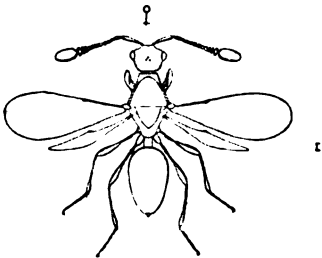
3 CERATOPRIA-Adm.



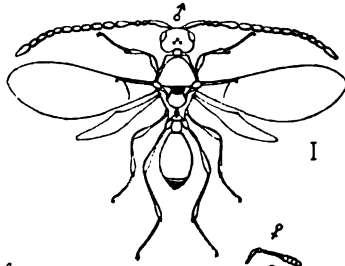
4 TRICHOPIRIA-Adm.



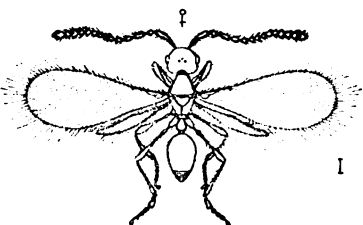
5 PHRENOPRIA-Adm.



6 MONELATA-Fort.



7 BASALYS-Westw.



8 MYRMECOPRIA-Adm.

John. del.

NORTH AMERICAN PROCTOTRYPIDÆ.



INDEX.

[Genera and species in *italics* are synonyms.]

A.		Page.		Page.
<i>Acanthoscello</i> Ashm	236	<i>Aneotata</i> Först	380	
<i>americanus</i>	236	<i>californica</i>	381	
<i>flavipes</i>	236	<i>georgica</i>	382	
<i>Acerota</i> Först	260	<i>hirtifrons</i>	382	
<i>caryæ</i>	262	<i>polita</i>	382	
<i>cecidomyia</i>	261	<i>Aneurhynchus</i> Westw	403	
<i>floridana</i>	261	<i>aneurus</i>	324	
<i>melanostropha</i>	262	<i>floridanus</i>	405	
<i>opaca</i>	245	<i>inermis</i>	448	
<i>Aclista</i> Först	374	<i>mellipes</i>	404	
<i>borealis</i>	378	<i>spinosus</i>	358	
<i>californica</i>	378	<i>virginicus</i>	405	
<i>conica</i>	377	<i>Anisoptera</i> Herr. Sch	408	
<i>floridana</i>	378	<i>Anommatus</i> Först	320	
<i>missouriensis</i>	377	<i>Anopedia</i> Först	290	
<i>rufa</i>	376	<i>error</i>	291	
<i>rufescens</i>	376	<i>incertus</i>	292	
<i>rufopetiolata</i>	376	<i>pentatomus</i>	292	
<i>rugosopetiolata</i>	377	<i>Anoxus</i> Thomson	67	
<i>Acoloides</i> How	169	<i>Chittendenii</i>	68	
<i>bicolor</i>	172	<i>lævis</i>	68	
<i>Emertonii</i>	171	<i>musculus</i>	69	
<i>Howardii</i>	171	<i>Anteon</i> Jurine	94	
<i>melleus</i>	172	<i>minutus</i>	97	
<i>saltidis</i>	170	<i>pallidicornis</i>	97	
<i>seminiger</i>	173	<i>politus</i>	96	
<i>subapterus</i>	173	<i>Popenoei</i>	96	
<i>Acolus</i> Först	174	<i>puncticeps</i>	97	
<i>borealis</i>	207	<i>rugosus</i>	96	
<i>canadensis</i>	207	<i>tibialis</i>	96	
<i>rubriclavus</i>	214	<i>unifasciatus</i>	95	
<i>xanthogaster</i>	174	<i>Anteria</i> Först	224	
<i>Zabriskiei</i>	175	<i>nigriceps</i>	226	
<i>Acoretus</i> Hal	362	<i>virginicus</i>	225	
<i>Acropiasta</i> Först	353	<i>Apegus</i> Först	226	
<i>flavicauda</i>	354	<i>elongatus</i>	227	
<i>subaptera</i>	354	<i>Apenesia</i> Westw	46	
<i>Alaptus</i> Cress. nec Walk	292	<i>coronata</i>	47	
<i>aleurodis</i>	293	<i>Aphanogmus</i> Thoms	132	
<i>Allotropa</i> Först	250	<i>bicolor</i>	134	
<i>americana</i>	250	<i>floridanus</i>	134	
<i>Amblyaspis</i> Först	266	<i>marylandicus</i>	135	
<i>americanus</i>	269	<i>niger</i>	133	
<i>californicus</i>	268	<i>pallidipes</i>	135	
<i>longipes</i>	270	<i>varipes</i>	135	
<i>minutus</i>	269	<i>virginiensis</i>	135	
<i>occidentalis</i>	267	<i>Aphelopus</i> Dalm	99	
<i>petiolatus</i>	268	<i>affinis</i>	102	
<i>rugiceps</i>	269	<i>albopictus</i>	101	
<i>Amilus</i> Hald	292	<i>americanus</i>	100	
<i>aleurodinia</i>	293	<i>melaleucus</i>	101	
<i>Ampulicomorpha</i> Ashm	79	<i>rufiventris</i>	100	
<i>confusa</i>	80	<i>Aradophagus</i> Ashm	166	
		<i>fasciatus</i>	166	

	Page		Page
<i>Artibolus</i> Hal.....	400	<i>Cephalonomia</i> Westw.....	47
<i>Ateleopterus</i> Först.....	43	<i>cynipiphila</i>	49
<i>nubilipennis</i>	44	<i>floridana</i>	431
<i>tarsalis</i>	45	<i>gallicola</i>	48
<i>virginiensis</i>	45	<i>kirticollis</i>	436
<i>Atritomus</i> Först.....	121	<i>hyalinipennis</i>	49
<i>americanus</i>	122	<i>nubilipennis</i>	49
<i>Baryconus</i> Först.....	215	<i>Ceraphroninae</i> , subfam.....	102
<i>oecanthi</i>	215	<i>Ceraphronini</i> , tribe.....	122
<i>floridanus</i>	228	<i>Ceraphron</i> Jurine.....	123
<i>Basalys</i> Westw.....	442	<i>amplus</i>	129
<i>analis</i>	445	<i>armatus</i>	106
<i>brevicornis</i>	446	<i>auripes</i>	125
<i>californica</i>	446	<i>basalis</i>	127
<i>fuscipennis</i>	444	<i>californicus</i>	127
<i>picipes</i>	444	<i>carinatus</i>	131
<i>ruficornis</i>	445	<i>fusciceps</i>	125
<i>utahensis</i>	444	<i>flaviscapus</i>	130
<i>Beoneura</i> Först.....	232	<i>glaber</i>	130
<i>cinctiventris</i>	213	<i>longicornis</i>	132
<i>bicolor</i>	235	<i>macroneurus</i>	136
<i>floridana</i>	217	<i>melanocerus</i>	129
<i>Bæini</i> , tribe.....	167	<i>melanocephalus</i>	126
<i>Bæus</i> Hal.....	177	<i>mellipes</i>	131
<i>americanus</i>	179	<i>minutus</i>	125
<i>clavatus</i>	179	<i>pallidiventris</i>	126
<i>minutus</i>	178	<i>pedalis</i>	130
<i>niger</i>	178	<i>punctatus</i>	127
<i>piceus</i>	179	<i>salicicola</i>	128
<i>Belyta</i> Jurine.....	355	<i>unicolor</i>	128
<i>erythropus</i>	357	<i>Ceraphron</i> Thoms. nec Jurine.....	107
<i>frontalis</i>	356	<i>Ceratacis</i> Thoms.....	270
<i>mellipes</i>	361	<i>Ceratobæus</i> Ashm.....	175
<i>monilicornis</i>	356	<i>binotatus</i>	176
<i>texana</i>	357	<i>cornutus</i>	176
<i>Belytina</i> , subfam.....	345	<i>Ceratopria</i> Ashm.....	428
<i>Bethylus</i> , Latr.....	52	<i>bifoveolata</i>	430
<i>armiferus</i>	34	<i>floridana</i>	431
<i>cellularis</i>	74	<i>infuscatipes</i>	431
<i>centratus</i>	54	<i>longiceps</i>	429
<i>constrictus</i>	53	<i>megaplasta</i>	430
<i>musculus</i>	62	<i>pusilla</i>	430
<i>pedatus</i>	53	<i>Ceratriton</i> Hal.....	391
<i>prolongus</i>	72	<i>Chelognynus</i> Hal.....	92
<i>Bocchus</i> Ashm.....	91	<i>atriventris</i>	93
<i>flavicollis</i>	91	<i>canadensis</i>	93
		<i>Henshawii</i>	93
		<i>Chelothelius</i> Reinh.....	85
		<i>Chlidonia</i> H. Sch.....	400
		<i>Chromoteleia</i> Ashm.....	219
<i>Cacus</i> Riley.....	223	<i>semicyanea</i>	220
<i>oecanthi</i>	224	<i>Cinetus</i> Jurine.....	359
<i>Caloptenobia</i> Riley.....	241	<i>californicus</i>	361
<i>Calliceras</i> Nees.....	123	<i>macrodyctium</i>	360
<i>Callicello</i> Ashm.....	218	<i>mellipes</i>	361
<i>laticinctus</i>	219	<i>nasutus</i>	362
<i>Caloteleia</i> Westw.....	212	<i>ruficornis</i>	360
<i>cinctiventris</i>	213	<i>similis</i>	361
<i>Heidemanni</i>	213	<i>Codrus</i> Jurine.....	344
<i>Marlattii</i>	214	<i>Crolopelta</i> Ashm.....	289
<i>rubriclava</i>	214	<i>mirabilis</i>	289
<i>striata</i>	213	<i>Copelus</i> Prov.....	331
<i>Calyoza</i> Westw.....	57	<i>paradozus</i>	331
<i>ampylonyx</i> Westw [— <i>Dryinus</i>].....	85	<i>Coptera</i> Say.....	408
<i>Catillus</i> Först.....	265	<i>polita</i>	410
<i>maculipes</i>	265		

	Page.		Page.
<i>Corynopria</i> Hal.....	441	<i>Eritrissomerus</i> Ashm.....	298
<i>Cremastobreus</i> Ashm.....	228	<i>cecidomyia</i>	299
<i>bicolor</i>	229	<i>Eumegaspilus</i> Ashm.....	119
		<i>canadensis</i>	117
D.		<i>erythrothorax</i>	120
<i>Dendrocerus</i> Ratz.....	104	<i>ottawensis</i>	117
<i>Diapria</i> Latr.....	420	<i>Eupsenella</i> Westw.....	54
<i>abdominalis</i>	427		
<i>agromyzæ</i>	423	G.	
<i>apicalis</i>	428	<i>Galesus</i> Curt.....	408
<i>armata</i>	425	<i>atricornis</i>	409
<i>brevicornis</i>	391	<i>floridanus</i>	410
<i>californica</i>	422	<i>politus</i>	410
<i>carinata</i>	418	<i>pilosus</i>	411
<i>ciliata</i>	428	<i>texanus</i>	411
<i>colou</i>	425	<i>quebecensis</i>	49
<i>columbiana</i>	424	<i>Glyphopria</i> Hal.....	388
<i>conica</i>	418	<i>Glyptonota</i> Först.....	401
<i>erythropus</i>	423	<i>nigriclavata</i>	401
<i>erythrothorax</i>	424	<i>Gonatopus</i> Ljungh.....	82
<i>muscar</i>	426	<i>bicolor</i>	85
<i>obtusa</i>	427	<i>californicus</i>	85
<i>terminatus</i>	395	<i>contortulus</i>	83
<i>tetraplasta</i>	426	<i>decipiens</i>	85
<i>texana</i>	424	<i>flavifrons</i>	84
<i>utahensis</i>	423	<i>Goniozus</i> Först.....	72
<i>virginica</i>	426	<i>cellularis</i>	74
<i>Diapritinæ</i> , subfam.....	384	<i>columbianus</i>	74
<i>Diapritini</i> , tribe.....	406	<i>foveolatus</i>	74
<i>Dichognus</i> Thoms.....	119	<i>Hubbardi</i>	76
<i>Dicondylus</i> Hal.....	82	<i>megacephalus</i>	74
<i>Diphora</i> Först.....	348	<i>platynotæ</i>	75
<i>Disognus</i> Först.....	332	<i>politus</i>	75
<i>Dissolcus</i> Ashm.....	164	<i>Gryon</i> Hal.....	205
<i>nigricornis</i>	165	<i>borealis</i>	207
<i>Dissomphalus</i> Ashm.....	41	<i>canadensis</i>	207
<i>californicus</i>	43	<i>columbiana</i>	208
<i>carolinensis</i>	43	<i>flavipes</i>	208
<i>xanthopus</i>	42	<i>sumipennis</i>	206
<i>Dryinina</i> , subfam.....	80		
<i>Dryinus</i> Latr.....	85	H.	
<i>alatus</i>	86	<i>Habropelte</i> Thoms.....	104
<i>americanus</i>	87	<i>armatus</i>	106
<i>bifasciatus</i>	86	<i>fuscipennis</i>	105
E.		<i>Hadrocera</i> Först.....	123
<i>Ectadius</i> Först.....	277	<i>Hadronotus</i> Först.....	229
<i>Elaptus</i> Forbes nec Hal.....	293	<i>anasæ</i>	233
<i>Embolemus</i> Westw.....	19	<i>floridanus</i>	232
<i>nasutus</i>	89	<i>largi</i>	231
<i>Emboleminæ</i> , subfam.....	77	<i>leptocorisæ</i>	231
<i>Entomacis</i> Först.....	388	<i>myrmecophilus</i>	232
<i>Entomius</i> Herr. Schf.....	380	<i>rugiceps</i>	233
<i>Epimeces</i> Westw.....	277	<i>rugosus</i>	232
<i>Episemus</i> Thoms.....	99	<i>Helorinæ</i> , subfam.....	334
<i>Epyris</i> Westw.....	57	<i>Helorus</i> Latr.....	331
<i>æneiceps</i>	59	<i>paradoxus</i>	331
<i>analis</i>	60	<i>Hemilexis</i> Först.....	388
<i>carbonarius</i>	59	<i>brevicornis</i>	391
<i>columbianus</i>	60	<i>californica</i>	390
<i>grandis</i>	61	<i>mellipetiolata</i>	390
<i>laviventris</i>	34	<i>submarginata</i>	389
<i>megacephalus</i>	61	<i>Hemilexodes</i> Ashm.....	399
<i>occidentalis</i>	59	<i>floridana</i>	400
<i>rufipes</i> Say.....	60	<i>Hemizus</i> Westw.....	142
		<i>Heterolepis</i> Nees.....	94

	Page.	Laelius Ashm.—Continued.	Page.
<i>Holopedina</i> Först	47	<i>rufipes</i>	51
<i>nubilipennis</i>	49	<i>tricarinatus</i>	51
<i>Hoplogryon</i> Ashm	200	<i>trogoderma</i>	51
<i>brachypterus</i>	204	<i>Lagynodes</i> Först	120
<i>claripennis</i>	203	<i>minutus</i>	121
<i>longipennis</i>	202	<i>Lapitha</i> Ashm	222
<i>minutissimus</i>	202	<i>spinosa</i>	222
<i>obscuripes</i>	204	<i>Leptacia</i> Först	270
<i>pteridia</i>	203	<i>breviventris</i>	273
<i>rufipes</i>	205	<i>cynipiphilus</i>	274
<i>solitarius</i>	205	<i>flavicornis</i>	275
<i>tibialis</i>	203	<i>floridanus</i>	272
<i>Hoplopria</i> Ashm	388	<i>longiventris</i>	273
<i>pulchripennis</i>	388	<i>pubescens</i>	275
<i>Hoplotelia</i> Ashm	227	<i>punctatus</i>	272
<i>floridana</i>	228	<i>puncticeps</i>	275
<i>Hyperbaeus</i> Först	177	<i>rugiceps</i>	272
<i>Hypocampsia</i> Först	298	<i>striatifrons</i>	273
<i>pluto</i>	298	<i>Leptorhaptus</i> Först	349
I.		<i>conicus</i>	350
<i>Idiotypa</i> Först	403	<i>rufus</i>	350
<i>Idris</i> Först	235	<i>Loboscelida</i> Westw	385
<i>laeviceps</i>	235	<i>Loxotropa</i> Först	412
<i>Inostemma</i> Hal	256	<i>abrupta</i>	414
<i>californica</i>	256	<i>californica</i>	415
<i>Cressoni</i>	257	<i>columbiana</i>	113
<i>Horni</i>	257	<i>flavipes</i>	415
<i>Lintneri</i>	259	<i>Harringtoni</i>	435
<i>Packardi</i>	258	<i>melles</i>	447
<i>Rileyi</i>	258	<i>nana</i>	415
<i>Inostemmini</i> tribe	248	<i>pezomachoides</i>	416
<i>Iphetrachelus</i> Hal	249	<i>ruficornis</i>	414
<i>americanus</i>	250	<i>Lygocerus</i> Först	107
<i>Iamarus</i> Hal	380	<i>armatus</i>	106
<i>atropetiolatus</i>	398	<i>californicus</i>	111
<i>Isobrachium</i> Först	35	<i>floridanus</i>	100
<i>floridanum</i>	39	<i>niger</i>	110
<i>magnum</i>	36	<i>pacificus</i>	112
<i>mandibulare</i>	38	<i>picipes</i>	109
<i>montanum</i>	39	<i>6-dentatus</i>	111
<i>myrmecophilum</i>	37	<i>stigmatus</i>	110
<i>rudiventre</i>	38	<i>triticeum</i>	110
<i>Isocybus</i> Först	327	<i>Lyteba</i> Thoms	357
<i>canadensis</i>	329	M.	
<i>longiventris</i>	330	<i>Macrohyannis</i> Först	348
<i>nigriclavus</i>	328	<i>Macroteleia</i> Westw	216
<i>pallipes</i>	328	<i>floridana</i>	217
<i>Isorhombus</i> Först	276	<i>macrogaster</i>	217
<i>arizonensis</i>	277	<i>virginiensis</i>	218
<i>hyalinipennis</i>	276	<i>Megaspilidea</i> Ashm	123
<i>Isostasius</i> Först	254	<i>Megaspilini</i> tribe	103
<i>arietinus</i>	255	<i>Megaspilus</i> Westw	112
<i>fuscipennis</i>	255	<i>ambiguus</i>	115
<i>musculus</i>	255	<i>anomaliventris</i>	114
L.		<i>californicus</i>	118
<i>Labeo</i> Hal	87	<i>canadensis</i>	117
<i>longitarsis</i>	88	<i>Harringtoni</i>	116
<i>nasutus</i>	89	<i>hyalinipennis</i>	116
<i>texanus</i>	89	<i>laeviceps</i>	118
<i>typhlocyba</i>	89	<i>lucens</i>	338
<i>Labolips</i> Hal	406	<i>marylandicus</i>	116
<i>Laelius</i> Ashm	50	<i>niger</i>	110
<i>nigripilosus</i>	52	<i>ottawensis</i>	117
		<i>Popenoei</i>	114

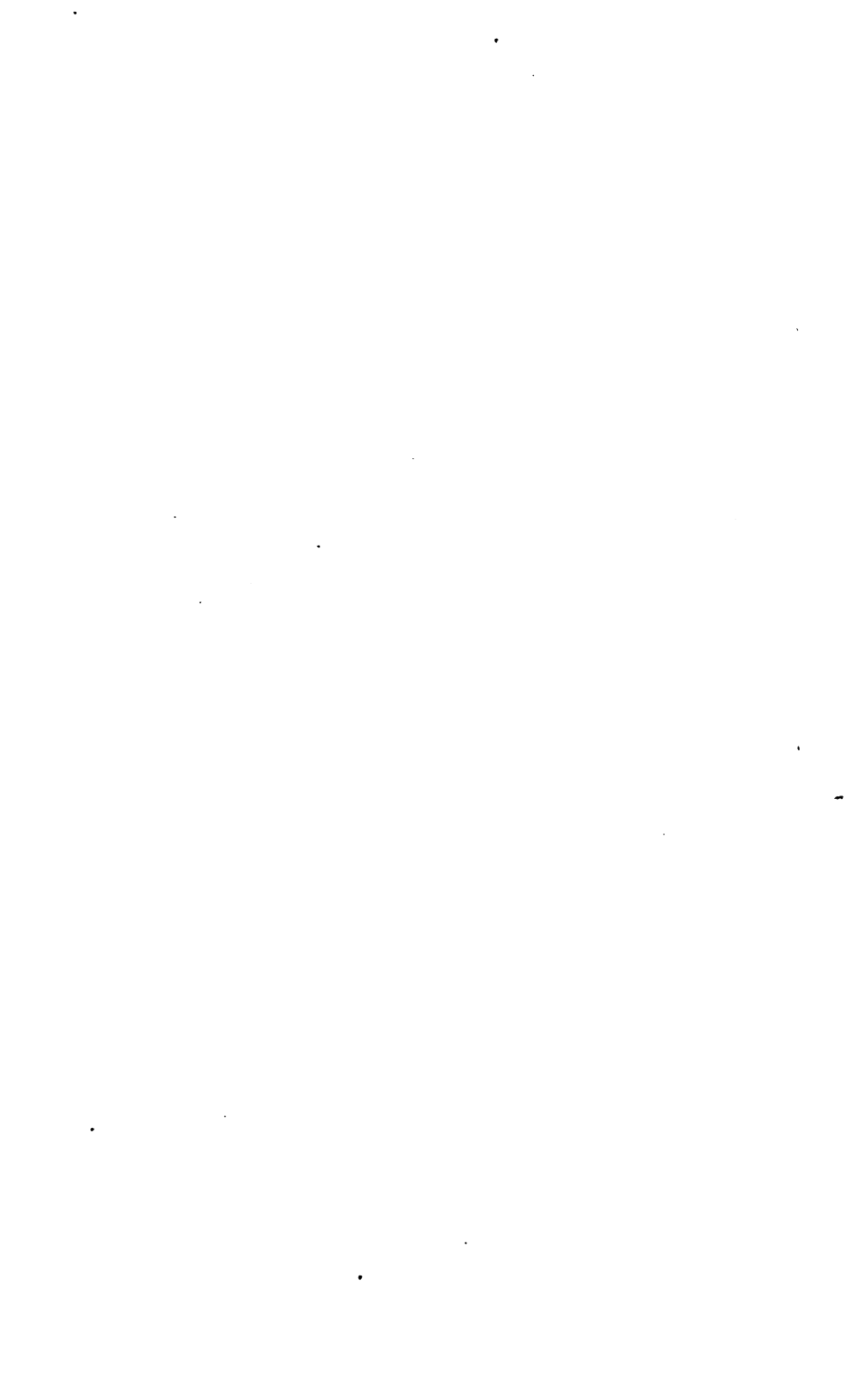
Megaepilus Westw—Continued.	Page.
Pergandeii.....	118
Schwarzii.....	115
striatipes.....	115
virginicus.....	117
<i>Megaepilodes</i> Ashm.....	104
<i>armatus</i>	106
<i>Mesitius</i> Spinola.....	62
<i>bifoveolatus</i>	66
<i>brachypterus</i>	66
<i>californicus</i>	65
<i>minutus</i>	65
<i>monticola</i>	63
<i>nevadensis</i>	64
<i>texanus</i>	67
<i>vancouverensis</i>	64
<i>Metaelisis</i> Först.....	251
<i>belonocneme</i>	252
<i>orythropus</i>	252
<i>Microps</i> Hal.....	120
<i>Monopria</i> Hal.....	403
<i>Miota</i> Först.....	351
<i>americana</i>	353
<i>analis</i>	352
<i>coloradensis</i>	352
<i>glabra</i>	352
<i>Monelata</i> Först.....	441
<i>hirticollis</i>	442
<i>mellicollis</i>	441
<i>Monocrita</i> Först.....	252
<i>canadensis</i>	329
<i>carinata</i>	254
<i>melanostropha</i>	262
<i>nigripes</i>	253
<i>Monomachus</i> Westw.....	345
<i>Mymarinae</i>	9
<i>Mymaridae</i>	26
<i>Mymaroidae</i>	26
<i>Myrmecomorphus</i> Westw.....	78
<i>Myrmecopria</i> Ashm.....	447
<i>mellea</i>	447
<i>Mytrophorus</i> Först.....	98
<i>Mythras</i> Hal.....	403
N.	
<i>Neoceraphron</i> Ashm.....	136
<i>macroneurus</i>	136
O.	
<i>Opazon</i> Hal.....	379
<i>Opiethacantha</i> Ashm.....	221
<i>mellipes</i>	221
<i>Oxyblais</i> Först.....	357
<i>spinosus</i>	358
P.	
<i>Pantoclis</i> Först.....	366
<i>analis</i>	370
<i>californica</i>	371
<i>coloradensis</i>	371
<i>crassicornis</i>	369
<i>flavipes</i>	370
<i>floridana</i>	372
<i>insularis</i>	369
<i>inermis</i>	448

Pantoclis Först—Continued.	Page.
<i>megaplasta</i>	368
<i>montana</i>	368
<i>picipes</i>	368
<i>rufescens</i>	372
<i>ruficauda</i>	370
<i>Pantolyta</i> Först.....	383
<i>brunnea</i>	383
<i>Paramesius</i> Westw.....	391
<i>clavipes</i>	393
<i>oregonensis</i>	395
<i>pallidipes</i>	395
<i>parvulus</i>	393
<i>spinosus</i>	394
<i>terminatus</i>	393
<i>utahensis</i>	394
<i>Parasierola</i> Can.....	72
<i>Pedinomma</i> Först.....	78
<i>Pentacantha</i> Ashm.....	181
<i>canadensis</i>	182
<i>Perisemus</i> Först.....	69
<i>floridanus</i>	71
<i>formicoides</i>	70
<i>mellipes</i>	71
<i>minimus</i>	71
<i>oregonensis</i>	70
<i>prolongus</i>	72
<i>Phænopria</i> Ashm.....	436
<i>affinis</i>	440
<i>aptera</i>	439
<i>hematobia</i>	438
<i>minutissima</i>	438
<i>montana</i>	440
<i>parva</i>	440
<i>Schwarzii</i>	439
<i>virginica</i>	458
<i>Phanurus</i> Thoms.....	139
<i>flavipes</i>	141
<i>floridanus</i>	140
<i>opacus</i>	141
<i>ovivorus</i>	140
<i>Phorbas</i> Ashm.....	90
<i>laticeps</i>	90
<i>Plestopleura</i> Först.....	265
<i>maculipes</i>	265
<i>Platygaster</i> Latr.....	322
<i>aciculatus</i>	328
<i>aphidis</i>	325
<i>canadensis</i>	329
<i>caryæ</i>	323
<i>error</i>	291
<i>floridensis</i>	324
<i>gracilis</i>	328
<i>Herrickii</i>	324
<i>hiemalis</i>	311
<i>obscuripennis</i>	325
<i>pallipes</i>	328
<i>Platygasterinae</i> , subfam.....	247
<i>Platygasterini</i> , tribe.....	262
<i>Platymischus</i> Westw.....	411
<i>torquatus</i>	419
<i>Polygnotus</i> Först.....	299
<i>actinomeridis</i>	317
<i>alnicola</i>	310
<i>angulatus</i>	319
<i>artemisæ</i>	309

Scello Latr.—Continued.	Page.	Telenomus Hal.—Continued.	Page.
opacus	245	chrysopa	159
ovivorus	243	clisiocampæ	160
pallidicornis	244	colodasidia	160
pallidipes	244	dolichocerus	145
rufiventris	245	<i>euschiati</i>	162
Scelionomorpha Ashm.	239	geometra	157
bisulca	240	gnophæle	149
longicornis	240	gossypicola	156
Scellionina, subfam.	136	gracilicornis	149
Scelionini, tribe.	208	graptæ	151
<i>Sclerochroa</i> Först.	40	heliotididis	152
<i>macrogaster</i>	41	Hubbardi	146
<i>gallicola</i>	48	ichthyura	153
<i>cynipicola</i>	49	infuscatipes	154
Scleroderma Latr.	40	Koebelei	147
<i>macrogaster</i>	41	lavernæ	158
<i>thoracica</i>	33	maculipennis	155
<i>contracta</i>	34	minimus	152
Sclerogibba Stefano.	77	nigricapus	147
<i>Serphus</i> Schrk.	333	noctua	148
Sierola Cameron	55	orgyia	152
<i>ambigua</i>	56	pennay iwanicus	160
Sparasion Latr.	237	persimilis	150
<i>famelicum</i>	238	podisi	158
<i>nigrum</i>	239	psallus	146
<i>pacificum</i>	239	<i>rileyi</i>	156
<i>pilosum</i>	238	rufoniger	161
Spilomicrini, tribe.	385	sphingis	155
Spilomicrus Westw.	396	spilosomatis	151
<i>armatus</i>	397	<i>stygius</i>	106
<i>atriclavus</i>	398	<i>utahensis</i>	148
<i>atropetiolatus</i>	398	<i>Thiboneura</i> Thoms.	107
<i>flavicornis</i>	398	Thoron Hal.	168
<i>foveatus</i>	399	<i>pallipes</i>	168
<i>longicornis</i>	399	<i>opaca</i>	141
Synacra Först.	400	<i>Trichacius</i> Prov.	177
<i>Synarsis</i> Först.	132	<i>clavatus</i>	179
Synopsea Först.	285	Trichacis Förster	294
<i>antennaria</i>	288	<i>arizonensis</i>	296
<i>cornicola</i>	288	<i>auripes</i>	297
<i>inermis</i>	287	<i>brunnipes</i>	296
<i>melanocerus</i>	289	<i>rubicola</i>	296
<i>nigripes</i>	286	<i>rufipes</i>	295
<i>rufipes</i>	287	<i>virginiensis</i>	297
<i>ruficapus</i>	288	Trichopria Ashm.	431
T.		<i>carolinensis</i>	434
Teleasini, tribe.	180	<i>flavipes</i>	436
Teleas Latr.	198	<i>Harringtonii</i>	435
<i>coxalis</i>	199	<i>hirticollis</i>	436
<i>dolichocerus</i>	145	<i>pacifica</i>	436
<i>infuscatipes</i>	154	<i>pentaplasta</i>	433
<i>lineaticeps</i>	199	<i>Popenoei</i>	435
<i>mandibularis</i>	200	<i>rufipes</i>	434
<i>orgyia</i>	152	<i>Zimmermanni</i>	434
<i>pallidipes</i>	200	Trichostereis Förster	107
<i>sphingis</i>	155	<i>floridanus</i>	107
Telenomini, tribe.	138	Trimorus Förster	138
Telenomus Hal.	142	<i>americana</i>	139
<i>anase</i>	233	Trissacantha Ashm.	182
<i>arzanæ</i>	157	<i>americana</i>	183
<i>bifidus</i>	154	<i>rugosa</i>	184
<i>brochymene</i>	164	Trissolcus Ashm.	161
<i>californicus</i>	156	<i>brochymene</i>	164
		<i>euschiati</i>	162

Trissolcus Ashm—Continued.

	Page.		Page.
murgantiæ.....	163	Xenotoma Först.....	362
podisi.....	162	mandibularia.....	363
rufocephus.....	163	xanthopus.....	363
thyantæ.....	163	Xestonotus Först.....	365
Tropidopria Ashm.....	416	andriciphilus.....	366
carinata.....	418		
conica.....	418	Z.....	
simulans.....	419	Zacrita Först.....	392
torquata.....	419	Zelotypa Först.....	364
tetraplasta.....	420	coloradensis.....	371
Tropidopsis Ash.....	402	flavipes.....	365
clavata.....	402	longicornis.....	365
		rufoicornis.....	366
		texana.....	366
		Zygota Först.....	372
X.....		americana.....	373
Xenomerus Walk.....	184	californica.....	373
pallidipes.....	184	texana.....	374
rubicola.....	185		





cd VIII, 39

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SMITHSONIAN INSTITUTION.

UNITED STATES NATIONAL MUSEUM.

BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM.

No. 46.

THE MYRIAPODA OF NORTH AMERICA.

BY

CHARLES HARVEY BOLLMAN.

EDITED BY

L. M. UNDERWOOD.

[Containing the collected writings on North American Myriapoda, both published and unpublished, of the late C. H. Bollman.]

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1893.

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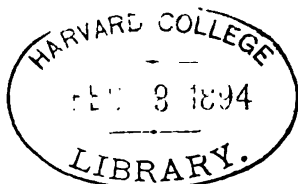
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Smithsonian Inst.

ADVERTISEMENT.

This work (Bulletin No. 46) is one of a series of papers intended to illustrate the collections belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

The publications of the National Museum consists of two series—the Bulletin, of which this is No. 46, in continuous series, and the Proceedings, of which the sixteenth volume is now in press. A small edition of each paper in the Proceedings is distributed in pamphlet form to specialists in advance of the publication of the bound volume.

The Bulletin of the National Museum, the publication of which was commenced in 1875, consists of elaborate papers based upon the collections of the Museum, reports of expeditions, etc., while the Proceedings facilitate the prompt publication of freshly-acquired facts relating to biology, anthropology, and geology, descriptions of restricted groups of animals and plants, the discussion of particular questions relative to the synonymy of species, and the diaries of minor expeditions.

Other papers, of more general popular interest, are printed in the Appendix to the Annual Report.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletin of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean (chairman), A. Howard Clark, R. E. Earll, Otis T. Mason, Leonhard Stejneger, Frederick W. True, and Lester F. Ward.

S. P. LANGLEY,

Secretary of the Smithsonian Institution.

WASHINGTON, August 31, 1893.

THE
MYRIAPODA
OF
NORTH AMERICA.

BY
CHARLES HARVEY BOLLMAN.

EDITED BY
Lucien H. Underwood
L. M. UNDERWOOD.

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TABLE OF CONTENTS.

	Page.
I. Introduction, with brief biography of Mr. Bollman, by Dr. C. V. Riley	7
II. A review of the Literature of the North American Myriapoda, by Dr. L. M. Underwood	9
III. A Collection of Mr. Bollman's Published Writings on Myriapoda:	
1. Preliminary Description of Ten New North American Myriapods (<i>Am. Naturalist</i> , xxi, pp. 81, 82, Jan., 1887)	19
2. Notes on the North American Lithobiidæ and Scutigeraidæ (<i>Proc. U. S. National Museum</i> , 1887, pp. 254-266)	21
3. Description of Fourteen New Species of North American Myriapods (<i>Proc. U. S. National Museum</i> , 1887, pp. 617-627)	34
4. Notes on North American Julidæ (<i>Ann. New York Ac. Sc.</i> , iv, pp. 25-44, 1887)	45
5. Description of New Genera and Species of North American Myriapoda (<i>Julidæ</i>), (<i>Entomologica Americana</i> , ii, pp. 225-229, March, 1887)	62
6. New Genus and Species of Polydesmidæ (<i>Entomologica Americana</i> , iii, pp. 45-46, June, 1887)	67
7. New North American Myriapods (<i>Entomologica Americana</i> , iii, pp. 81-83, August, 1887)	70
8. A Preliminary List of the Myriapoda of Arkansas, with Descriptions of New Species (<i>Entomologica Americana</i> , iv, pp. 1-8, April, 1888) ..	73
9. Notes upon a Collection of Myriapoda from East Tennessee, with Description of a New Genus and six New Species (<i>Ann. New York Acad. Sci.</i> , 1888, pp. 106-112)	81
10. Notes on a Collection of Myriapoda from Cuba (<i>Proc. U. S. National Museum</i> , 1888, pp. 335-338)	86
11. Notes on a Collection of Myriapoda from Mossy Creek, Tenn., with a Description of a New Species (<i>Proc. U. S. National Museum</i> , 1888, pp. 339-342)	90
12. Description of a New Species of Insect, <i>Fontaria pulchella</i> , from Strawberry Plains, Jefferson County, Tenn. (<i>Proc. U. S. National Museum</i> , Vol. xi, p. 316)	94
13. Notes upon some Myriapods belonging to the U. S. National Museum (<i>Proc. U. S. National Museum</i> , 1888, pp. 343-350)	95
14. Catalogue of the Myriapods of Indiana (<i>Proc. U. S. National Museum</i> , 1888, pp. 403-410)	104
15. Myriapoda (<i>Proc. U. S. National Museum</i> , xii, pp. 211-216, 1889)	112

IV. A Series of Mr. Bollman's Posthumous Papers on Myriapoda:

1. A Catalogue of the Known Myriapoda of North America, North of Mexico	117
2. Some New Species of North American Myriapoda.....	131
3. Notes on the Synonymy of the Myriapoda.....	136
4. Notes upon the Species of Myriapoda described by Thomas Say.....	144
5. Notes upon the North American Myriapods described by C. L. Koch.....	150
6. Classification of the Myriapoda.....	153
7. Classification of the Syngnatha.....	163
8. Synopsis of the Scolopendridæ of North America	168
9. A List of the Myriapoda of Minnesota.....	181
10. Notes on the Polyzoniidæ.....	189
11. Notes upon a Collection of Myriapods belonging to the United States National Museum	190
V. Omissions and Corrections.....	201
VI. An Index of Scientific Names.....	205

I.

INTRODUCTORY NOTE.

SIR: I have the honor to submit for publication the following descriptive papers on Myriapoda by the late C. H. Bollman, of Bloomington, Ind. Some of these papers were left by Mr. Bollman apparently ready for the printer. These have been edited by Prof. L. M. Underwood, of Syracuse University, who has added certain notes and prepared an introductory review of the literature of the North American Myriapods. To the manuscript papers have been added all articles upon the Myriapoda previously published by Mr. Bollman, as you have yourself suggested the desirability of presenting in compact form, as a sort of memorial, the work done upon this class by one whose untimely death is so regretted. Mr. O. F. Cook, of Syracuse, N. Y., who has greatly interested himself in the subject of the Myriapods, has aided in getting the published papers together and also in selecting such short papers as were worthy of publication from the mass of manuscripts purchased, in connection with Mr. Bollman's collection, for the National Museum.

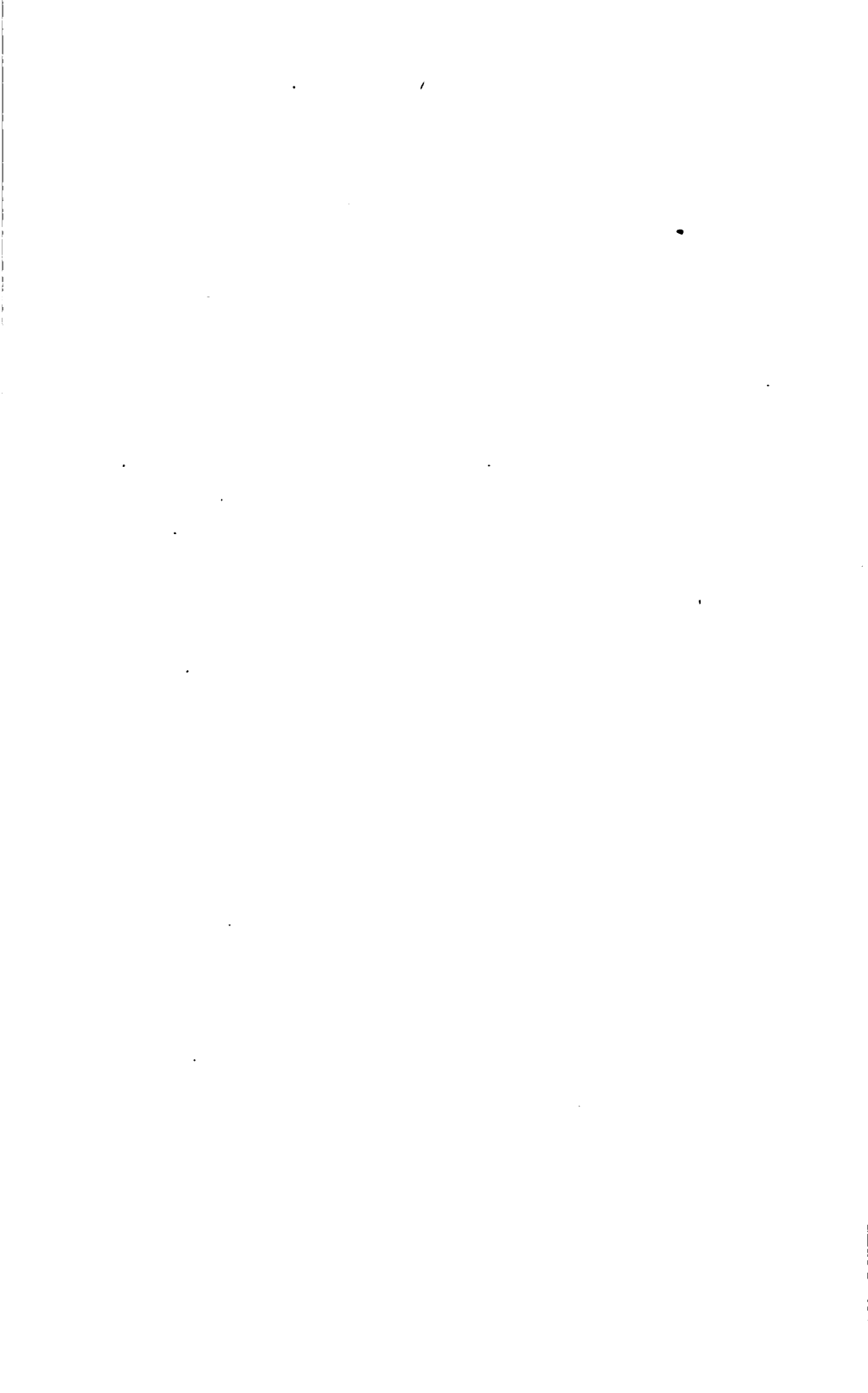
It is fitting that the Museum should publish this series of papers, because Mr. Bollman based much of his work upon Museum material and was generous enough to deposit all his types in the Museum, so that, together with the material deposited by Mr. Underwood and the work done by him for the Museum, our collection in this class is one of the most important in the country.

At the time of his death Charles Harvey Bollman was not yet 21 years of age. He was born in Monongahela City, December 24, 1868; was educated at the University of Indiana at Bloomington; graduated at this institution in the class of 1889; was appointed, immediately after graduation, as an assistant in the Fish Commission, and died at Way Cross, Ga., July 13, 1889. He was an exceptionally bright student in college; President David S. Jordan considered him, as a naturalist, one of the most brilliant and promising he had ever known, and certainly his published papers exhibit the ability and care of a well-trained man. It can never cease to be a matter of regret that he did not live to carry out one of his chief ambitions, as expressed in correspondence, to monograph the Myriapoda of the United States.

Respectfully, yours,

C. V. RILEY,
Honorary Curator of Insects.

Prof. G. BROWN GOODE,
*Assistant Secretary Smithsonian Institution,
In charge of National Museum.*



II.

A REVIEW OF THE LITERATURE OF THE NORTH AMERICAN MYRIAPODA.

BY DR. L. M. UNDERWOOD.

The Myriapoda of the United States were first studied by Thomas Say in 1821. In a paper published in the Journal of the Philadelphia Academy of Sciences* he described eighteen species, mostly from the Southern States, which he arranged in the genera *Julus*, *Polydesmus*, *Polyxenus*, *Cermatia*, *Lithobius*, *Cryptops*, and *Geophilus*. Scattering species had already been described by the earlier European naturalists, and even in America one species had been described in 1820 by Rafinesque under the name of *Selista forceps*. Yet Say's work will stand as the first of importance, recognizing, as it does, a considerable number of species.

After Say's time no species were added to our fauna for twenty years, when Brandt (1841) published from St. Petersburg his Recueil, consisting of a reprint of a series of papers relating to the Myriapods which he had issued since 1839. Four species from our territory are here described. After Brandt came Newport, who published in 1844 a monograph of the Chilopoda, in which five species were added to our fauna and the genera *Theatops* and *Scolopocryptops* were founded, to which he referred some of Say's species. Three years later (1847) Koch published his "System der Myriapoden", in which a considerable number of American species were described. The same year appeared volume iv of "Aptères," by Baron Walckenaer and Paul Gervais, in which the latter describes two new species from the United States and includes descriptions of the species of Say, Brandt, and Newport, in all amounting to twenty-six species.

During this period two other papers appeared. In 1853 Charles Girard published in an appendix to the Report of Marcy's Exploring Expedition a description of *Scolopendra heros*, the large "centipede" of the Southwest, with plate, together with two species of *Julus* supposed to be new. Three years later Sager published brief and indefinite descriptions of three new species, giving neither distinguishing characters to his species nor the localities from which he obtained his specimens. The first four decades since Say's first publication thus found us with a known Myriapod fauna of about thirty nominal species.

*An alphabetic list of the literature relating to the American species is appended to this introduction.

In 1860 an extensive monograph of the Mexican Myriapoda was published from Geneva by Henri de Saussure, in which were described a few species from the United States and other portions of America. This was soon followed (1863) by Koch's elaborate work, "Die Myriapoden," in which he described and figured fifteen species from the United States.

Dr. H. C. Wood published a series of papers from 1861 to 1867 which to this time are the most extensive series published by a single individual, and which have formed the basis of subsequent study. His papers include a preliminary paper on *Scolopendra* (1861), followed by a general catalogue of the Chilopoda of America (1863); in 1864 appeared three papers on the various families of the Diplopoda, and the next year his "Myriapoda of North America," in which he described all the species then known to inhabit this country, comprising eighteen genera and ninety-two species. Two brief supplementary papers appeared in 1867 on sundry new species from California and Texas respectively.* A monograph of *Lithobius* by Ludwig Koch appeared in 1862, containing two species from the United States.

During the years from 1869 to 1872 E. D. Cope published, in three papers, descriptions of several cave myriapods, including the new genera *Pseudotremia*, *Andrognathus*, *Petaserpes*, and *Scoterpes*. Humbert and Saussure published "Myriapoda Nova Americana" in 1869, which contains only Mexican species, many of which are likely, however, to appear on our Arizonian borders when the Myriapod life of that region shall be studied. In 1870 Dr. Packard noted the discovery of *Pauropus* in Massachusetts, the first appearance of the order Pauropoda in America. In the same and the following year Meinert described two species from New Orleans in his "Myriapoda Musei Hauniensis," I, II. In 1872 Oscar Harger described a number of species with the new genus *Trichopetalum*.

During the same year the sixth part of the "Mission Scientifique au Mexique" appeared, consisting of De Saussure's elaborated "Etudes sur les Myriapodes." In this work several species from the United States are described, and a very complete catalogue of all the described species from the American continent is appended. In Hayden's Geological Survey of the Territories, Annual for 1873, Dr. Packard gives some notes on the Myriapods of Colorado, and describes, without assigning names, several new forms. In 1887 he described *Polydesmus cavi-cola*, a cave-inhabiting species from Utah.

The travels in this country of Gustaf Eisen led to the collection of various groups of animal forms, besides the Vermes, in which he was particularly interested. The species of *Lithobius* collected by him were described by Dr. Stuxberg in 1875, amounting to seven species. Two

*As Dr. Wood nowhere mentions the work of either Saussure or Koch it is more than probable that they were unknown to him. This is still more evident from the synonyms which have resulted.

other papers, "Genera et species Lithobioidarum" and "Lithobioidæ Americæ Borealis," were published by the same author from Stockholm the same year. These papers are valuable from their full synonymy and notes on distribution. A translation of the latter paper was published in vol. VII of the Proceedings of the California Academy of Sciences. In 1877 *Brachygybe rosea*, from California, was described by Andrew Murray in his volume on "Economic Entomology." The discovery of a second species of Pauropoda in America was announced in 1878, by Dr. John A. Ryder, and in 1879 a third, forming the new genus *Eurypauropus*; the same author also published (1881) a list of the *Lysiopetalidæ*, adding a new genus and species, *Zygonopus whitei*. In 1880 Dr. Karsch, of Berlin, published three papers on the various families of Diplopoda, in which six new species from the United States are described. Kohlrausch, in 1881, published his "Gattungen und Arten der Scolopendriden," in which all the known species of this family are described. Two American species of *Scolopendra* were described, which had been briefly characterized in a preliminary paper published in 1878.

Three papers were published by Dr. Packard in 1883; the first was a description of *Polydesmus ocellatus* (afterwards referred to *Craspedosoma* by Stuxberg); the second was a revision of the *Lysiopetalidæ*, giving a summary of the known information to date and describing the new genus *Cryptotrichus*; the third was a morphological paper on the appendages and mouth parts of the Myriapoda.

In 1884 Dr. Latzel published a valuable monograph of the Myriapoda of Austro-Hungary in which a few notes are given on the American species of the so-called *Lysiopetalidæ*, most of which he referred to the *Chordeumidæ*; the work contains synopses of all the genera of Myriapoda and a very complete bibliography of the subject, containing 611 titles. Dr. Meinert, of Copenhagen, published in 1884 an account of the Chilopoda of the Museum of Comparative Zoölogy, describing fifteen new species from the United States; and the year following appeared the third part of his "Myriapoda Musæi Hauniensis," in which two species of *Lithobius* were added to our fauna.

In November, 1885, L. M. Underwood published a review of the principal literature on the American species, with synoptic tables of genera and a summary of the group as known to him; at that time, however, some minor papers were overlooked, so that the summary given should be somewhat increased. Twenty-seven genera with one hundred and twenty-nine species were recorded.* A subsequent paper

*The geographic distribution of the species as described up to that time is peculiar. The State having the largest number was California, with 27; then followed Pennsylvania, 25; Illinois, 16; Georgia, 13; Oregon, 12; Virginia, 10; Texas, 8; New York, 7; and Florida, 7; all others falling below 5; 15 had no described species. The report of Indiana with only two species may have incited Mr. Bollman to his study of local forms, which commenced soon after.

by the same author gave synopses of the Scolopendridæ of our region based largely on the collections of the U. S. National Museum. Mr. Jerome McNeill published (1887) two papers in the tenth volume of the Proceedings of the U. S. National Museum; in these eighteen new species were described. A third paper published in 1888 added another species, *Polydesmus butleri*, to the Indiana fauna. This brings the summary of literature to the time when Mr. Bollman first commenced his publications. It will be seen that the work on the myriapoda of the United States consists largely of fragmentary papers scattered among the scientific periodical literature of several languages. Only one work—that of Dr. H. C. Wood—made any attempts at completeness, and that had been published almost a quarter of a century. The time was ripe for some one of keen observing powers and careful judgment to collate these species already described, and collect and describe the new forms that had been or could be found. Into this work Mr. Bollman entered with enthusiasm, and his activity is shown in the numerous papers that in so short a space came from his study. In addition to the papers published in the Proceedings of the U. S. National Museum and reprinted in this volume, Mr. Bollman published seven papers: two in the *Annals of the New York Academy*, one in the *American Naturalist*, and four in *Entomologica Americana*. In these papers are included descriptions of thirty-one new species, many of which were collected in the vicinity of his home in Indiana. In addition three new genera were described.*

The anatomy, morphology, and development of the Myriapoda have remained almost untouched in America and comparatively little has been written anywhere. Its single paper by Packard on the morphology comprises about all the American literature on the subject. A few brief notes on the poisonous nature of some of the more common species have appeared from time to time. The economic relations of the Myriapoda have been only briefly considered. Besides scanty notes on the habits of certain species scattered through the papers of Wood and others mentioned above, we add a brief summary of what is included in the serial entomological reports of the various States. In his Tenth Report on the insects of New York, Fitch describes the ravages of *Polydesmus complanatus*† in cabbage, causing the so-called "club-foot." Walsh, in the *Practical Entomologist* for 1866, describes *Julus multistriatus*, which he afterwards identified as *J. ceruleocinctus* Wood,‡ as causing injury to strawberry roots. In the *American Entomologist* for 1869, he mentions two forms, a *Julus* and a *Polydesmus*, as burrowing in strawberries. In the Eleventh Illinois Report (Thomas)

*Adding to these the species described in the Proceedings of the U. S. National Museum and the extent of Mr. Bollman's work on the Myriapoda is apparent; the totals will then be 3 genera and 63 species.

†Probably *P. canadensis* Nowp.

‡=*Campodes flavicornis* Koch.

D. W. Coquillett discusses the ravages of *Julus impressus* in corn, giving it the name of the "corn myriapod." Forbes, in the Thirteenth Illinois Reports, names *Cambala annulata* the "strawberry millipede," on account of its destructive habits.

Much has been written in America on the fossil Myriapoda, especially by Samuel H. Scudder. The discussion of this portion of the literature, however, is beyond the limits of the present review.

The literature above noticed chronologically, together with minor notes on structure and distribution, is appended below arranged alphabetically by authors.

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* Gives brief diagnoses of *Lithobius howei*, *L. pullus*, *L. minnesotæ*, *L. trilobus*, *L. proridens*, *L. cardinalis*, *Scoliopterus ruber* (p. 81), *Julus ellipticus*, *J. burkei*, and *Fontaria virginensis brunnea* (p. 82).

† Describes *Nannolene* (gen. nov.) *burkei* (p. 225), *Parajulus castaneus* (p. 226), *P. oblectus*, *P. varius*, *Spirobolus pensacolæ* (p. 227), *S. hebes*, *Julus owenii* (p. 228), *Paradesmus evides*, *Geophilus glaber* (p. 229).

‡ Describes numerous representatives of the family, among which are the following new species: *Julus owenii* (p. 25), *Spirobolus pensacolæ* (p. 29), *S. hebes* (p. 31), *Parajulus ellipticus*, *P. castaneus* (p. 35), *P. oblectus*, *P. varius* (p. 38), *Nannolene* (n. g., p. 39), *N. burkei* (p. 40).

§ Describes *Polydesmus nitidus*, *Chætaspis* (n. g., p. 45), *C. albus*, *Scytonotus cavernarum* (p. 46).

|| Describes *Parajulus rugosus* (p. 81), *Strongylosoma poeyi*, *Geophilus salemensis*, *G. setiger* (p. 82), *Lithobius holzingeri* (p. 83).

** Describes the following new species: *Lithobius branneri* (p. 107), *Striaria* (n. g.) *granulosa* (p. 108), *Craspedosoma carinatum* (p. 109), *Scoliopterus gracilis* (p. 110), *Lithobius cæcus* (p. 111), *L. similis* (p. 112).

†† Describes as new species: *Craspedosoma flavidum*, *Polydesmus minor* (p. 2), *P. pinetorum*, *Sphariodesmus pudicus* (p. 3), *Linotania branneri* (p. 4), *Geophilus okolonæ* (p. 5), *Lithobius pinguis*, *L. celer* (p. 7), *L. adipex* (p. 8).

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† Mentions 32 species and describes as new *Fontaria tennesseensis*.

‡ Catalogues or annotates 44 species, of which the following are described as new: *Fontaria georgiana*, *F. tallulah*, *F. rileyi*, *Euryurus erythropygus australis* (new subspecies), *Geophilus virginienensis*, *Geophilus smithi*, *Lithobius elattus*, *L. xenopus*, *L. underwoodi*, *L. rex*.

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III.

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PRELIMINARY DESCRIPTIONS OF TEN NEW NORTH AMERICAN MYRIAPODS.

BY CHARLES H. BOLLMAN.

The following new species are in the museum of the Indiana University. They have been collected by different persons from various parts of the United States; those from Bloomington, Ind., being collected by myself. The types of these will be deposited in the Smithsonian Institution.

1. *Lithobius howei* n. sp.

Brown; antennæ 20-jointed; ocelli 25-7; prosternal teeth 6; coxal pores 5, 5, 6, 5; spines of the first pair of feet 2, 3, 2; penultimate lost; last 1, 3, 3, 1; length 15^{mm}.

Habitat.—Fort Snelling, Minn. (W. D. Howe).

2. *Lithobius pullus* n. sp.

Brown; antennæ 20-jointed; ocelli 12-5; prosternal teeth 4; coxal pores 3, 4, 3, 3-2, 2, 2, 2; spines of the first pair of feet 1, 3, 2-1, 2, 1; penultimate 1, 3, 3, 2-1, 3, 3, 1; last 1, 3, 3, 1-1, 3, 3, 0; claw of the female genitalia tripartite; length 9-11^{mm}.

Habitat.—Bloomington, Ind.

3. *Lithobius minnesotæ* n. sp.

Brown; antennæ 20-jointed; ocelli 13-6; prosternal teeth 4; coxal pores 4, 5, 5, 4; spines of the first pair of feet 1, 3, 2; penultimate 1, 3, 3, 1; last 1, 3, 2, 1; claw of the female genitalia tripartite; length, 16^{mm}.

Habitat.—Fort Snelling, Minn. (W. D. Howe).

4. *Lithobius trilobus* n. sp.

Brown; antennæ 20-jointed; ocelli 22-8; prosternal teeth 4; coxal pores 3, 4, 4, 3-3, 4, 4, 4; spines of the first pair of feet 1, 3, 1; penultimate 1, 3, 2, 1-1, 3, 1, 0; last 1, 3, 1, 0; claw of the female genitalia tripartite; length, 10-11^{mm}.

Habitat.—Bloomington, Ind.

5. *Lithobius proridens* n. sp.

Yellow-brown; antennæ 24-29 jointed; ocelli 15-6; prosternal teeth 10-12; coxal pores 4, 6, 5, 5-3, 4, 4, 3; spines of the first pair of feet 3, 3, 2-2, 3, 1; penultimate 1, 3, 3, 2-1, 3, 3, 1; last 1, 3, 3, 2-1, 3, 3, 1; claw of the female genitalia whole; length 10-12^{mm}.

Habitat.—Bloomington, Ind.

6. *Lithobius cardinalis* n. sp.

Brown; antennæ 20-31 jointed; ocelli 10-6; prosternal teeth 4; coxal pores 2, 4, 3, 2-2, 2, 3, 2; spines of the first pair of feet 2, 3, 2; penultimate 1, 3, 3, 1; last 1, 3, 3, 2-1, 3, 3, 1; claw of the female genitalia tripartite; length, 6-9^{mm}.

Habitat.—Bloomington, Ind.

7. *Scolioptanes ruber* n. sp.

Bright red; attenuated anteriorly and posteriorly; sternum cordiform; frontal plate present; pre-basal plate concealed; ventral plates with a large, median foveola; pairs of feet in the male 67-69, female 71-73; length, 53^{mm}.

Habitat.—Bloomington, Ind.

8. *Iulus ellipticus* n. sp.

Resembles *I. impressus*. Vertex with a median sulcus; eyes nearly elliptical; ocelli about 55, in 8 series; segments 46; first segment semi-circular, not striate; anal spine stout, projecting beyond the valves; length, 25^{mm}.

Habitat.—Fort Snelling, Minn. (W. D. Howe).

9. *Iulus burkei* n. sp.

Rather stout; brown, with a series of dark dots on each side; vertex with a median sulcus; eyes triangular; ocelli 17, indistinct, in 4 series; segments 45-47; first segment produced forward to the eyes, not striate; last segment rounded; anal valves marginate; length, 14^{mm}.

Habitat.—Ukiah, Cal. (J. K. Burke.)

10. *Fontaria virginicensis brunnea* n. var.

This new variety can be easily distinguished from *virginicensis* by its color and form of last segment. Chestnut brown, lateral plates and under parts yellow, a black, median dorsal line; last segment very blunt, sparsely pilose.

NOTES ON THE NORTH AMERICAN LITHOBIIDÆ AND SCUTIGERIDÆ.

BY CHARLES H. BOLLMAN.

In examining the collection of myriapods belonging to the museum of the Indiana University, I have found a number of species new to science. On account of the confused condition of our North American myriopoda, I have deemed it best to introduce a description of the known species embraced in the same collection, as well as the description of those species supposed to be new to science.

The types of the new species have been deposited in the United States National Museum.

Family A.—LITHOBIIDÆ.

Genus I.—**LITHOBIUS** Leach.

The following key is only for the species in the present paper. The last legs of *juventus* being lost, I have not included it. In counting the spines I have also included the claw.

* Posterior angles of none of the dorsal plates produced.

a. Penultimate pair of feet armed with three spines; coxal pores in a single series, round.

b. Anal pair of feet armed with one spine.

c. Posterior coxæ unarmed.

d. Prosternal teeth 4-8; joints of the antennæ 20-23.

e. Joints of the last pair of legs not provided with or produced into knots.

f. First pair of feet armed with 0, 1, 1 spines; claw of the female genitalia bipartite KOCHII, 1.

ff. Spines of the first pair of feet 1, 3, 2; claw of the female genitalia tripartite MINNESOTÆ, sp. nov., 2.

fff. Spines of the first pair of feet 2, 2, 2-2, 3, 2; claw of the female genitalia whole BILABIATUS, 3.

ee. Third and fourth joints produced into knots; spines of the first pair of feet 2, 3, 2; claw of the female genitalia tripartite, TUBER, sp. nov., 4.

dd. Prosternal teeth 10-12; joints of the antennæ 24-29; spines of the first pair of feet 2, 3, 1-3, 3, 2; claw of the female genitalia whole; color, yellow brown PRORIDENS, sp. nov., 5.

cc. Coxæ armed with a single spine; prosternal teeth, 4; joints of the antennæ 20; spines of the first pair of feet 1, 2, 1-1, 3, 2; claw of the female genitalia tripartite PULLUS, sp. nov., 6.

bb. Anal feet armed with two spines; prosternal teeth, 4; joints of the antennæ 20; ocelli, 18-25; spines of the first pair of feet 1, 3, 1; claw of the female genitalia tripartite TRILOBUS, sp. nov., 7.

bbb. Anal feet armed with three spines; coxæ with an indistinct spine; prosternal teeth 4; joints of antennæ 20-31; spines of the first pair of feet 2, 3, 2; claw of the female genitalia tripartite.

CARDINALIS, sp. nov., 8.

** Posterior angles of 9, 11, 13 dorsal plates produced.

a. Anal pair of feet armed with one spine; penultimate with two.

b. Coxæ unarmed; coxal pores in a single series.

c. Antennæ 20-jointed; prosternal teeth 6; ocelli 25 *HOWER*, sp. nov., 9.

cc. Antennæ more than 30-jointed; claw of the female genitalia tripartite.

d. Coxal pores round, 7, 7, 6, 5; antennæ 31-jointed; ocelli 27... *AZTECUS*, 10.

dd. Coxal pores transverse, 6, 6, 6, 4-9, 10, 9, 6; joints of antennæ 33-43; ocelli 23-48 *FORFICATUS*, 11.

bb. Coxæ armed with a single robust spine; coxal pores multiseriate; prosternal teeth 15-20; joints of antennæ 20, long *XANTI*, 12.

aa. Anal and penultimate feet each armed with two spines; coxæ unarmed; joints of the antennæ 20; prosternal teeth 4 *POLITUS*, 13.

*** Posterior angles of the 7, 9, 11, 13 dorsal plates produced.

a. Anal feet armed with one spine; coxæ unarmed; coxal pores in a single series.

b. Penultimate pair of feet armed in the two spines; joints of antennæ 31-38; prosternal teeth 12-14; coxal pores 7, 7, 6, 5, 10, 10, 10, 9, transverse; spines of the first pair of feet 2, 2, 1, 3, 3, 2... *MORDAX*, 14.

bb. Penultimate pair of feet armed with three spines; joints of antennæ 26-30; prosternal teeth 8; coxal pores 4, 4, 5, 2, 4, 5, 5, 4, round; spines of the first pair of feet 1, 3, 2, 2, 3, 2 *CLARUS*, 15.

**** Posterior angles of the 6, 7, 9, 11, 13 dorsal plates produced.

a. Anal feet with a single spine; coxæ armed; coxal pores multiseriate; joints of antennæ 19-23; prosternal teeth 14-18; spines of the first pair of feet 2, 3, 1-2, 3, 2 *MULTIDENTATUS*, 17.

Subgenus *Archilithobius* Stuxberg.

1. *Lithobius kochii* Stuxberg.

Lithobius kochii Stuxberg, Öfver. Kongl. Vetens.-Akad. Förfhandl., 68, 1875
(*Saucelito*, Cal.)

To this species I refer a specimen from Ukiah, Cal., which has lost the antennæ and nearly all the feet. It has 11 ocelli, arranged in 5 series, prosternal teeth 4, small; coxal pores 3, 4, 4, 3, small and round; color fulvous.

2. *Lithobius minnesotæ*, sp. nov.

Brown, head darkest, feet and ventral laminae not much paler; tip of antennæ and prehensorial feet rufous.

Slender, smooth; very sparsely pilose. Head subcordate, wider than long (3.5: 3), smooth, very sparsely hirsute.

Antennæ short, joints 20, mostly long; the last long and sharp, densely hirsute.

Ocelli 13, arranged in 6 series.

Prosternal teeth 4, small and indistinct.

Coxal pores 4, 5, 5, 4, rather small, round.

Spines of the first pair of feet 1, 3, 2; penultimate 1, 3, 3, 1; last pair 1, 3, 2, 1.

Posterior pair of feet moderately long and slightly swollen.

Claw of the female genitalia moderately wide, tripartite, the middle lobe much longer; spines robust, subequal.

Length of body 16^{mm}; last pair of legs 5^{mm}.

Habitat.—Fort Snelling, Minn.

This species is described from one specimen collected by Mr. Walter D. Howe. It is related to *Lithobius pullus*, but is distinguished by its larger size, the joints of the antennæ, the coxal pores, and a few points about the claw of the female genitalia.

3. *Lithobius bilabiatus* Wood.

Lithobius bilabiatus Wood, Proc. Acad. Nat. Sci. Phil., 130, 1867. (*Rock Island, Ill.*)

Brown, head darkest, feet and ventral laminae paler, the tip of antennæ rufous.

Somewhat robust, smooth, a little roughened posteriorly; sparsely hirsute, ventral laminae sometimes almost densely hirsute posteriorly. Head large, obcordate, of nearly equal length and breadth, nearly smooth, sparsely pilose.

Antennæ short, joints 20-23, mostly long, densely hirsute.

Ocelli distinct, 11-20, arranged in 5-7 series.

Prosternal teeth 4-8, moderately large and stout.

Coxal pores 3, 4, 4, 3-4, 5, 5, 4, round; sometimes the depression is shallow and the pores indistinct.

Spines of the first pair of feet 2, 2, 2-2, 3, 2; penultimate 1, 3, 3, 1-1, 3, 3, 3; last pair 1, 3, 2, 0-1, 3, 3, 1.

Posterior feet rather short, moderately swollen.

Claw of the female genitalia large and stout, whole; spines short and strong, the inner shortest.

Length of body 12-18^{mm}; last pair of legs 5-6^{mm}.

Habitat.—Illinois (Rock Island), Indiana (Bloomington), Michigan (Ludington, N. B. Pierce).

I have examined a large number of specimens of this species from Bloomington, Ind., and one from Ludington, Mich.

4. *Lithobius tuber*, sp. nov.

Lithobius bilabiatus Wood, Proc. Acad. Nat. Sci. Phila., 130, 1867. (*Rock Island, Illinois, in part; not type.*)

Brown, head and antennæ darkest, tip of latter rufous, feet and ventral plates pale.

Robust, moderately smooth; dorsal plates sparsely pilose; ventral more densely pilose posteriorly.

Head large, obcordate, wider than long (3.5: 3), moderately smooth, sparsely pilose.

Antennæ moderate, joints 20, mostly long and stout, moderately pilose.

Ocelli, 11-13, arranged in 5 or 6 series..

Prosternal teeth 4-6, small.

Coxal pores 4, 4, 5, 5-4, 5, 5, 4, large and round.

Spines of the first pair of feet, 2, 3, 2; penultimate, ♂ 1, 3, 3, 1, ♀ 1, 3, 2; last pair, ♂ 1, 3, 2, 0, ♀ 1, 3 (4), 2, 0.

The last pair of legs moderate, swollen; the inner side provided with

peculiar knobs in both male and female; male, the end of the third joints produced into a short, blunt lobe, which is surmounted with 4 spines, the basal third of the fourth joint produced into a large, flat, outward curving lobe, about 3^{mm} long, the end with a row of bristles, the end of the same joint produced into a small, sharp, outward pointing lobe; female, the end of third joint swollen, pilose, also two large spines, base of fourth joint produced into a cylindrical lobe, directed forwards, pilose, a little shorter than in the male, the end of the same joint swollen on the inner side.

Claw of the female genitalia wide, tripartite; spines stout, subequal. Length of body 10–15^{mm}; last pair of legs 4–5^{mm}.

Habitat.—Bloomington, Ind., and Rock Island, Ill.

The above description was taken from a male and female from the former locality. I have also sent a male to the collection of Dr. Anton Stuxberg, of Goteborg, Sweden, under the name of *L. bilabiatus*. Dr. Wood, in his description of *Lithobius bilabiatus*, has included two species. I have restricted *bilabiatus* to the one having the ordinary type of hind legs; the other I have described as a new species—*Lithobius tuber*.

5. *Lithobius proridens*, sp. nov.

Yellow-brown; antennæ, feet, and ventral laminæ pale.

Slender, smooth, sparsely pilose; ventral laminæ more densely pilose posteriorly.

Head obcordate, of about equal length and breadth (3: 2. 5), smooth, sparsely pilose.

Antennæ moderate, joints 24–29, short; rather densely pilose.

Ocelli sometimes indistinct and irregular, 8–15, arranged in 4–6 series.

Prosternal teeth 10–12, small, not crowded together.

Coxal pores 3, 4, 4, 3–4, 6, 5, 5 large and round.

Spines of the first pair of feet 2, 3, 1–3, 3, 2; penultimate 1, 3, 3, 1–1, 3, 3, 2; last pair 1, 3, 3, 1–1, 3, 3, 2.

Posterior pair of feet long, not swollen.

Claw of the female genitalia long and slender, whole; spines moderate, subequal.

Length of body 10–12^{mm}; last pair of legs 4–5^{mm}.

Habitat.—Bloomington, Ind.

This species is common under leaves, etc.

The following is the description of a specimen 5^{mm} long.

Antennæ short, joints 21. Prosternal teeth 10.

Ocelli distinct, 1, 2, 1. Coxal pores, 1, 1, 1, 1.

Spines of the first pair of legs 2, 3, 1; penultimate 1, 3, 3, 1; last pair 1, 3, 3, 1.

6. *Lithobius pullus*, sp. nov.

Brown; head darkest, feet and ventral laminæ pale; tip of antennæ and prehensorial feet chestnut.

Rather robust, smooth; sparsely hirsute, more densely beneath.

Head obcordate, longer than wide (7:6); moderately smooth; sparsely pilose.

Antennæ short, joints 20, not as short as in the preceding; the last joint long and sharp.

Ocelli moderate, 10-12, in 5 series.

Prosternal teeth 4, small and indistinct.

Coxal pores 2, 2, 2, 2-3, 4, 3, 3, moderately large and round.

Spines of the first pair of feet 1, 2, 1-1, 3, 2; penultimate 1, 3, 3, 1-1, 3, 3, 2; last pair 1, 3, 3, 0-1, 3, 3, 1.

Posterior pair of feet rather short, not swollen.

Claw of the female genitalia tripartite, the middle lobe by far longer than the others, which are small and indistinct; spines short and robust, the inner shortest.

Length of body 9-11^{mm}; last pair of legs 3^{mm}.

Habitat.—Bloomington, Ind.

I have over a dozen specimens of this species.

7. *Lithobius trilobus*, sp. nov.

Brown; head and the last 3-4 segments darkest; feet and ventral laminae gray-brown; tip of antennæ and prehensorial feet chestnut.

Rather slender, but wide and thin, moderately smooth; sparsely pilose, the ventral laminae more densely.

Head obcordate, a little longer than wide (6.5:6.2); nearly smooth; sparsely pilose.

Antennæ short, joints 20, mostly short, the last moderately long and blunt; densely pilose.

Ocelli 18-25, arranged in 7-8 series.

Prosternal teeth 4, small and indistinct.

Coxal pores 3, 4, 4, 3-4, 5, 5, 4, large and round.

First pair of feet armed with 1, 3, 1 spines; penultimate 1, 3, 1, 0-1, 3, 2, 1; last pair 1, 3, 1, 0.

Posterior pair of feet moderately long, not swollen; in the male the fifth joint is produced into a short lobe on the inner side.

Claw of the female genitalia wide, tripartite, the middle lobe not much longer than the others; spines rather short and stout.

Length of body 10-12^{mm}; last pair of legs 3.5^{mm}.

Habitat.—Bloomington, Ind.

This species is described from a number of specimens.

It is easily distinguished from the preceding by the claw of the female genitalia and by the greater number of ocelli.

8. *Lithobius cardinalis*, sp. nov.

Brown; head, tip of antennæ, and last pair of legs chestnut; ventral laminae and feet light.

Slender, smooth; sparsely pilose.

Head large, subcircular, wider than long (7:6); sparsely pilose.

Antennæ short, joints 20–31, rather short and thick; densely pilose. Ocelli distinct, 9–10, in 4–6 series.

Prosternal teeth 4, small and indistinct.

Coxal pores 2, 2, 3, 2–2, 4, 3, 2, round.

Spines of the first pair of feet, 2, 3, 2; penultimate 1, 3, 3, 1; last pair 1, 3, 3, 1–1, 3, 3, 2.

Posterior pair of feet moderate, not swollen. Claw of the female genitalia wide, tripartite, the middle lobe not much longer; spines short and robust, the inner shortest.

Length of body 6–9^{mm}; last pair of legs 2–2.5^{mm}.

Habitat.—Bloomington, Ind.

This species is common; I have taken it mostly under boards laid on a heavy growth of grass in the spring.

Subgenus *Lithobius* Stuxberg.

9. *Lithobius howei*, sp. nov.

Brown; head chestnut, antennæ very dark, feet and ventral laminae pale.

Robust, not smooth, more so posteriorly; sparsely pilose.

Head large, subquadrate, a little wider than long; sparsely pilose.

Antennæ short, joints 20, mostly long; densely pilose.

Ocelli distinct, 25, arranged in 7, very oblique series.

Prosternal teeth 6, small.

Coxal pores 5, 5, 6, 5, large and oval.

Spines of the first pair of feet 2, 3, 2; penultimate lost; last pair 1, 3, 3, 1.

Last pair of feet rather long.

Length of body 15^{mm}; last pair of legs 7^{mm}.

Habitat.—Fort Snelling, Minn. (Walter D. Howe.)

This species is described from one male in a rather bad condition, collected by my friend and fellow-student Mr. Walter D. Howe, after whom the species is named.

10. *Lithobius* ? *aztecus* Humbert & Saussure.

Lithobius aztecus Humbert & Saussure, Rev. & Mag. Zool., 2^e ser., xxi, 156, 1869.

Brown; scuta margined posteriorly with dark; head and antennæ dark; prehensorial feet and tip of antennæ rufous; feet and ventral laminae very pale.

Robust, not smooth, more so posteriorly; sparsely pilose.

Head large, subquadrate, a little wider than long (4.5: 4); nearly smooth, sparsely punctate; a few hairs scattered over the surface.

Antennæ moderate, joints 31, rather densely pilose.

Ocelli 27, arranged in 8 series, rather crowded together.

Prosternal teeth 12, the inner very small, the rest of an even size.

Coxal pores 7, 7, 6, 5, round and small.

Spines of the first pair of feet, 2, 3, 2; penultimate 1, 3, 3, 2; last pair 1, 3, 3, 2.

Last pair of feet moderately long and swollen.

Claw of the female genitalia not wide, indistinct tripartite, the middle lobe much longer; spines slender, the inner shortest.

Length of body 15^{mm}; last pair of legs 9^{mm}.

Habitat.—Ukiah, Cal. (J. H. Burke), and Mexico.

This species is described from one female, from the former locality, which has the antennæ and posterior legs broken off. Having only a short description of *aztecus*, I do not feel sure of my identification, although it agrees with it as far as it goes.

11. *Lithobius forficatus* Linnæus.

Scolopendra forficata Linnæus, Syst. Nat. Ed. x, I, 638, 1758.

Lithobius forficatus Leach, Edinb. Encycl., vii, 408, 1815.

Brown, of varying shades; feet and ventral laminæ paler; tip of antennæ rufous.

Robust, not smooth; a little hirsute, especially posteriorly, and along the edges of the dorsal laminæ.

Head large, subquadrate, much wider than long (8: 5. 5), rough, punctate, especially the frontal plate.

Antennæ long, joints 33–43, mostly short, densely hirsute.

Ocelli distinct or not, 23–48, arranged in 6–8 series.

Prosternal teeth moderate, 8–12.

Coxal pores 6, 6, 6, 4–9, 10, 9, 6, transverse or round in younger specimens.

Spines of the first pair of feet, 2, 3, 2; penultimate, 1, 3, 3, 2; last pair 1, 3, 3, 2.

Posterior feet long, not much inflated.

Claw of the female genitalia trilobed, the middle lobe much longer; spines short, robust, the inner shortest.

Length of body 18–28^{mm}; last pair of feet 10^{mm}.

Habitat.—Eastern United States.

I have examined about a dozen specimens of this species from Ludington, Mich., and one from Bloomington, Ind. One female has the claw of the genitalia four-lobed—having two divisions on the inner side of the middle lobe.

The following is a description of a young specimen:

Antennæ 32-jointed.

Ocelli 14, in 6 series.

Prosternal teeth 6–10.

Coxal pores 3, 3, 3, 3, round.

Spines of the first pair of feet, 2, 3, 2; penultimate 1, 3, 3, 1; last pair, 1, 3, 2, 0.

Length of body 11^{mm}; last pair of feet 4^{mm}.

12. *Lithobius xanti* Wood.

Lithobius xanti Wood, Journ., Acad. Nat. Sci., Phila., 15, 1863.

Fulvous, feet, antennæ and ventral plates pale, head dark.

Robust, not smooth; sparsely pilose above, the ventral plate densely pilose posteriorly.

Head moderate, obcordate, not much wider than long (5.3:5); smooth, sparsely pilose.

Antennæ long, joints 20, all long.

Ocelli 12-15, arranged in 6 or 7 series.

Prosternal teeth 15-20, small, not coadnate on the inner side.

Coxal pores numerous, arranged in 3-5 series.

Spines of the first pair of feet 2, 3, 1; penultimate (1), 1, 3, 3, 2; last pair (1), 1, 3, 2, 0, or (1), 1, 3, 2, 1.

Last pair of feet long, slender, not swollen.

Claw of the female genitalia long, wide, tripartite, the middle lobe long, the inner very small; spines, 3 on each side, long, slender, and wavy.

Length of body 20-25^{mm}; last pair of legs 9-11^{mm}.

Habitat.—California and Oregon.

I have examined a number of specimens of this species from Ukiah, Cal., collected by Mr. J. H. Burke.

13. *Lithobius politus* McNeill.

Lithobius politus McNeill (MSS.).

Brown; head, antennæ and edges of dorsal plates dark; feet and ventral plates paler.

Robust, smooth pilose.

Head moderate, obcordate, of about equal length and breadth; sparsely pilose.

Antennæ short, joints 20, mostly long.

Ocelli 15-18, arranged in 6 or 7 series.

Prosternal teeth 4, small.

Coxal pores 3, 4, 4, 3-5, 6, 6, round.

Spines of the first pair of feet 1, 3, 2; penultimate 1, 3, 3, 1; last pair 1, 3, 2, 1.

Last pair of feet moderate, scarcely swollen.

Claw of female genitalia short, wide, tripartite, the middle lobe not much longer; spines short and thick, subequal, the outer sometimes indistinct, notched on the inner side.

Length of body 8-11^{mm}; last pair of legs 3-4^{mm}.

Habitat.—Dublin and Bloomington, Ind., and Ludington, Mich.

I have examined the types of this species from Dublin, Ind., besides a number of specimens from Ludington, Mich., and one female from Bloomington, Ind. The one from the latter place is larger; the coxal pores are also more numerous and of a larger size.

Subgenus *Neolithobius* Stuxberg.14. *Lithobius mordax* Koch.

Lithobius mordax Koch., Die Myriapodengattung *Lithobius*, 34, 1862.

Brown, ventral laminae, feet and tip of antennae light; prehensorial feet bright chestnut.

Robust, not smooth, more so posteriorly.

Head subcordate, slightly longer than wide; punctate.

Antennae long, joints 31–38, mostly small; densely pilose.

Ocelli numerous, 34–50, in 7–10 series.

Prosternal teeth 12–14, stout, conic, not crowded much together.

Coxal pores 7, 7, 6, 5–10, 10, 10, 9, large, nearly all transverse.

First pair of feet armed with 2, 2, 1–3, 3, 2 spines; penultimate 1, 3, 3, 2; last pair 1, 3, 3, 1, or 1, 3, 3, 2.

Posterior feet rather long, scarcely inflated.

Claw of the female genitalia large, trilobed, the middle one by far the largest; spines rather long and slender, the inner shortest.

Length of body 20–26^{mm}; last pair of legs 10–11^{mm}.

Habitat.—Indiana, Kansas, Louisiana, Mississippi, and Florida.

I have examined specimens of this species from Bloomington, Ind., and Pensacola, Fla. Those from the latter locality have the coxal pores more numerous, the spines of the first pair of feet less, and a lighter coloration. One specimen 18^{mm} long, from the same place, has the ocelli 25 in number.

15. *Lithobius clarus* McNeill.

Lithobius clarus McNeill (MSS.).

Yellowish-brown; edges of scuta darker, antennae dark, tip rufous; ventral laminae and feet somewhat paler.

Rather slender, scarcely robust, smooth.

Head obcordate, length and breadth equal; a little rough.

Antennae moderately long, joints 26–30, becoming shorter towards the end, not densely pilose.

Ocelli moderate, 20–27, in 5–7 series.

Prosternal teeth 8, short, evenly separated.

Coxal pores few, 4, 4, 5, 3–4, 5, 5, 4, round.

Spines of first pair of feet 1, 3, 2–2, 3, 2; penultimate 1, 3, 3, 2; last pair 1, 3, 3, 1–1, 3, 3, 2.

Last pair of feet long, not inflated.

Claw of female genitalia broad, trilobed, the middle lobe about 1½ as long again as the others; spines moderately long and slender, the inner shortest.

Length of body 15^{mm}; last pair of feet 6^{mm}.

Habitat.—Pensacola, Fla.

The above description is taken from part of the type specimens. The following is a description of a young specimen:

Yellow; slender. Joints of antennæ 28.

Ocelli few, 13, arranged in 5 series.

Prosternal teeth 8.

Coxal pores 4, 4, 4, 3.

Spines of first pair of feet 1, 2, 1; penultimate 1, 3, 3, 2; last pair 1, 3, 3, 1.

Length of body 11^{mm}; last pair of feet 4. 5^{mm}.

16. *Lithobius juvenus*, sp. nov.

Brown; head and antennæ dark, tip of latter fulvous, feet and ventral plates pale.

Slender, not smooth; sparsely pilose.

Head large, subcircular, of nearly equal length and breadth, nearly smooth; sparsely pilose.

Antennæ moderately long, joints 31, short; rather densely pilose.

Ocelli 10, arranged in 4 series.

Prosternal teeth 4, small.

Coxal pores 4, 4, 4, 3, round.

Spines of the first pair of feet (†) 1, 3, 2; penultimate, 1, 3, 3, 1; last 1, 3, 3, 1.

Last pair of feet moderate, not swollen.

Claw of the female genitalia wide, short, tripartite, middle lobe longest; spines long and slender, subequal.

Length of body 9^{mm}; last pair of legs 3.5^{mm}.

Habitat.—Bloomington, Ind.

At first this species might be taken for the young of *mordax*. I have no young specimens of the latter on hand, but judging from Dr. Meiner's description of a specimen 15.5^{mm} long, it can easily be separated by the number of prosternal teeth (4 instead of 10), by the spines of the first pair of legs (1, 3, 2 instead of 2, 1, 1) and by the number of ocelli.

Subgenus *Eulithobius* Stuxberg.

17. *Lithobius multidentatus* Newport.

Lithobius multidentatus Newport, Trans. Linn. Soc., xix, 365, 1845.

Brown; varying from a deep mahogany to rather a light yellowish-brown; ventral laminae and feet paler; tip of antennæ, mouth parts, and the last few joints of the hind legs rufous.

Rather strongly or moderately robust; not smooth, more so posteriorly.

Head subobcordate, wider than long (6:5), somewhat rough.

Antennæ short, joints 19–23, mostly long.

Ocelli numerous, 27–35, arranged in 7–8 series.

Prosternal teeth 14–18, rather short, stout, conic, not crowded together.

Coxal pores numerous, large and small, arranged in 3–5 series.

First pair of feet armed with 2, 3, 1-2, 3, 2 spines; penultimate 1, 3, 3, 1-1, 3, 3, 2; last pair 1, 3, 2, 1-1, 3, 3, 2.

Last pair of feet long, not swollen.

Claw of the female genitalia wide, tripartite; spines moderately long and stout, subequal, point of the inner sometimes curved inwards.

Length of body 25^{mm}; posterior legs 10^{mm}.

Habitat.—Eastern United States.

I have examined numerous specimens of this species from Bloomington, Ind., and Ludington, Mich.

Specimens 12^{mm} long differ from the adult as follows:

Violet-brown; head bright chestnut; antennæ and posterior legs lighter.

Antennæ moderate, joints 20, moderately long.

Ocelli 16-17, arranged in 6 series.

Coxal pores arranged in 2 or 3 series.

Length of last pair of legs 5^{mm}.

Specimens 10^{mm} long differ from the above in having 13 ocelli, arranged in 6 series; coxal pores in 1 or 2 series, and the spines of the first pair of feet 2, 3, 1; length of last pair of legs 3^{mm}, while those 5^{mm} long have the ocelli 8, in 5 series; coxal pores 2, 2, 2, 2, in one series; spines of the first pair of feet 1, 2, 1; length of last pair of legs 2^{mm}.

Family B.—SCUTIGERIDÆ Gervais.

Genus II.—SCUTIGERA Lamarck.

18. *Scutigera forceps* (Rafinesque).

Selista forceps Rafinesque, *Annals of Nature*, 7, 1820.

Scutigera forceps Meinert, *Proc. Amer. Philos. Soc., Phila.*, 171, 1885.

Light brown, dorsal plates with three black stripes, the outer more or less broken, a greenish spot on the posterior border of each plate on each side of the median line; antennæ and tarsi brown, patella and tibia with two bluish bands, those of the last pair of legs dark, almost violet.

Robust, dorsal plates with obscure tubercles, spines numerous, arranged in almost regular series.

Cephalic plate large posteriorly, a moderate sulcus, not much impressed, margins not strongly elevated, moderately smooth, wider than long (6:5).

Antennæ rather slender, exceeding the length of body.

Dorsal plates moderately marginate, outer margin very sparsely spinulose, posterior margin strongly rounded, deeply excised in the middle, spines more numerous than on the outer margin.

Last dorsal plate narrow, with two indistinct transverse sulcations, sides rounded, not converging much, posterior margin obscurely excised.

All the stomata, except the first, of nearly equal length, first about 4 times in length of the dorsal plate.

Feet moderately carinated, spines rather numerous.

Last pair of feet a little more than twice as long as body, slender; tibia somewhat clavate, armed with two long, unequal spines.

Forceps of the female moderately short, sparsely pilose, on the inner side of the first joint a brush-like bunch of hair; the first joint longer than last (4:3).

Length of body 20–25^{mm}; last pair of legs 40–55^{mm}.

Habitat.—Eastern United States.

I have examined specimens of this species from Bloomington and New Harmony, Ind. *Scutigera linceci*, the only other species recorded from the United States, is much smaller and differs in color.

NORTH AMERICAN SPECIES OF LITHOBIIDÆ AND SCUTIGERIDÆ.

The following is a list of the North and Central American species of *Lithobiidæ* and *Scutigeridæ* known to date.

I have used the following letters for the different Zoo-Geographical regions as given in the Report U. S. Entomol. Comm., No. 3:

B = Boreal (Canadian) Province.

E = Eastern (Atlantic) Province (n = north; s = south).

W = West India or Antillean.

C = Central Province.

P = Western (Pacific) Province.

C A = Central America.

Family A.—LITHOBIIDÆ.

Genus I.—HENICOPS Newport.

1. *Henicops fulvicornis* (Meinert). E n.

Genus II.—LITHOBIUS Leach.

Subgenus *Archilithobius* Stuxberg.

2. *Lithobius cardinalis* Bollman. E n.
3. *Lithobius pullus* Bollman. E n.
4. *Lithobius trilobus* Bollman. E n.
5. *Lithobius bilabiatus* Wood. E n.
6. *Lithobius tuber* Bollman. E n.
7. *Lithobius minnesotæ* Bollman. E n.
8. *Lithobius paradoxus* Stuxberg. P.
9. *Lithobius obesus* Stuxberg. P.
10. *Lithobius kochii* Stuxberg. P.
11. *Lithobius jowensis* Meinert. E n.
12. *Lithobius exiguus* Meinert. E n.
13. *Lithobius lundii* Meinert. E n.
14. *Lithobius toltecus* Humb. & Saus. C A.
15. *Lithobius pusio* Stuxberg. P.
16. *Lithobius proridens* Bollman. E n.
17. *Lithobius monticola* Stuxberg. P.
18. *Lithobius bipunctatus* (Wood). P.

Subgenus *Hemilithobius* Stuxberg.

19. *Lithobius eucnemis* Stuxberg. E.
 20. *Lithobius cantabrigensis* Meinert. E n.

Subgenus *Pseudolithobius* Stuxberg.

21. *Lithobius megaloporus* Stuxberg. P.

Subgenus *Lithobius* Stuxberg.

22. *Lithobius mexicanus* Perbosc. C A.
 23. *Lithobius pinetorum* Harger. P.
 24. *Lithobius howei* Bollman. E n.
 25. *Lithobius paucidens* Wood. P.
 26. *Lithobius mysticus* Humb. & Sauss. C A.
 27. *Lithobius aztecus* Humb. & Sauss. C A, P.
 28. *Lithobius forficatus* (Linnaeus). B, E n, E s.
 29. *Lithobius aureus* McNeill. E s.
 30. *Lithobius politus* McNeill. E n.
 31. *Lithobius saussurei* Stuxberg. C A.
 32. *Lithobius planus* Newport. (?) B.
 33. *Lithobius xanti* (Wood). P.

Subgenus *Neolithobius* Stuxberg.

34. *Lithobius transmarinus* Koch. E s.
 35. *Lithobius juvenis* Bollman. E n.
 36. *Lithobius latzei* Meinert. E n.
 37. *Lithobius mordax* Koch. E n, E s.
 38. *Lithobius rorax* Meinert. E s.
 39. *Lithobius clarus* McNeill. E s.

Subgenus *Eulithobius* Stuxberg.

40. *Lithobius multidentatus* Newport. E n.

Family B.—SCUTIGERIDÆ Gervais.

Genus III.—SCUTIGERA Lamarck.

41. *Scutigera forceps* (Rafinesque). E n, E s.
 42. *Scutigera mexicana* (Humb. & Sauss). C A.
 43. *Scutigera linnei* (Wood). E s.
 44. *Scutigera elegans* Gervais. W.
 45. *Scutigera guildingii* (Newport). W.
 46. *Scutigera occidentalis* Meinert. C A.

INDIANA UNIVERSITY,

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DESCRIPTIONS OF FOURTEEN NEW SPECIES OF NORTH AMERICAN MYRIAPODS.

BY CHARLES H. BOLLMAN.

The present paper contains descriptions of fourteen species of myriapods which I believe to be new.

The types of all have been presented to the U. S. National Museum.

I take pleasure in acknowledging my indebtedness for specimens to Prof. George F. Atkinson, of the University of South Carolina; to Dr. Richard D. Owen, of New Harmony, Ind.; to Mr. Charles B. Branner, of Mossy Creek, Tenn.; to Mr. and Mrs. Carl H. Eigenmann, of San Diego, Cal.; to Mr. Charles L. Edwards, of Johns Hopkins University; to Mr. James H. Burke, of Ukiah, Cal., and to Mr. Frederick C. Test, of Westfield, Ind.

1. *Parajulus ectenes*, sp. nov.

Diagnosis.—Allied to *Parajulus pennsylvanicus* (Brandt), but the form of body much more slender, the repugnatorial pore not touching transverse suture, which is straight, and the male genitalia entirely different.

Type.—U. S. Nat. Museum.

Habitat.—Chapel Hill, Orange County, N. C.

Description of type.—Very dark brown, almost black, light spots more or less confluent and indistinct, joints of antennæ tipped with white; legs brown, slender; segments pilose and sulcate, as in *pennsylvanicus*. Vertex not sulcate, setigerous foveolæ present. Antennæ scarcely subclavate, longer than width of body. Ocelli distinct, ♂ 70-9, ♀ 60-8, arranged in a subtrapezoidal patch. Last segment not passing beyond anal valves, which are pilose and not marginate; anal scale obtuse-angled.

Number of segments, ♂ and ♀ 67.

Pairs of legs of female, 120.

Length of body: ♂ 46^{mm}, width 1.6^{mm}, antennæ 2.7^{mm}; ♀ length 54^{mm}, width 1.8^{mm}, antennæ 1.9^{mm}.

I have a single pair of this species, collected by Prof. George F. Atkinson. In the same collection there is a young *Parajulus* that probably belongs to this species. This species differs from any other by the slender body and peculiar form of the male genitalia, which I have not described here, but will do so in a paper relating to the genus. It may be worthy of remark that at present I consider the *Julus pilosicutis* of Wood as identical with *P. pennsylvanicus* (Brandt). His de-

scriptions seem to apply more to the younger stages of the latter. Concerning the status of *Julus montanus* Cope, I have regarded it as identical with *P. pennsylvanicus*, but it may represent a geographical form, as those from farther south have more segments and attain a larger size.

2. *Parajulus zonatus*, sp. nov.

Diagnosis.—Related to *Parajulus furcifer* (Harger), but the anal segment produced into a strong spine, which passes considerably beyond anal valves; segments with short, deep sulcations; color dark brown, posterior border of segments pale.

Type.—U. S. Nat. Museum.

Habitat.—Chehalis, Lewis County, Wash. Terr.

Description of type.—Brown, posterior border of segment pale, usual yellow lines and spots absent, legs dark. Robust, segments with numerous short sulcations, not pilose. Vertex rough, a distinct median sulcus, setigerous foveolæ present. Antennæ equaling width of body. Ocelli 46–7 to 56–8, arranged in a triangular patch. Segments, 52 to 53. Last segment produced into a large, straight, robust spine, passing beyond anal valves; anal valves slightly marginate, sparsely pilose; anal scale large, not passing beyond anal valves, pilose. Repugnatorial pore large, more deeply impressed than in *furcifer*, placed near transverse suture, which is nearly straight.

Pairs of legs, 93 to 95, moderately long. Length of body, 25 to 40^{mm}; width, 2 to 2.5^{mm}.

This species differs most strikingly from *P. furcifer* by having the last segment produced considerably beyond anal valves, and also by the plain color. In *P. furcifer* the last segment does not pass beyond the anal valves, and the yellow lines and spots, which are absent in *zonatus* and generally present in other species, are very bright; in fact, much more than in any other species.

The male genitalia, of which I have said nothing, differ very remarkably from that of *P. furcifer* or *P. oregonensis*.

I have examined two males of this species. They were collected by Mr. George Gregg, of Chehalis, Wash. Terr.

3. *Craspedosoma atrolineatum*, sp. nov.

Diagnosis.—Light brown, lateral carinæ and a median dorsal line dark. Male: Femur of fourth pair of legs produced at the middle into a knob-like process armed with a few rather large tubercles; femur of ninth pair with a cylindrical, tapering basal lobe, which is slightly tuberculate.

Type.—U. S. Nat. Museum.

Habitat.—Glacier, British Columbia.

Description of type.—Light brown, lateral carinæ and a median dorsal line black; legs pale. Robust, attenuated anteriorly and posteriorly, back not flattened. Ocelli very distinct, arranged in a subtriangular

patch, 20-4 to 23-5. Dorsal plates finely reticulated. Antennæ and legs long.

Male: 3, 4, 5, 6, 7 pairs of legs crassate, rest slender; about the first fifteen pairs, excepting the first two, with the tarsal joint armed on the under side with an elongate patch of short tubercles extending from the middle to claw, coxa not tuberculate; femur of fourth pair of legs produced into a knob-like appendage on the under side near the middle and armed with three or four moderately large sharp tubercles; femur of ninth pair with an inward projecting, cylindrical, tapering, basal lobe, which is indistinctly tuberculate on the upper side.

Length of body: ♂ 16 to 18.5^{mm}, width 1.2 to 1.5^{mm}; ♀ length 13 to 16^{mm}, width .9 to 1.2^{mm}, antennæ 2^{mm}.

This new species is more related to the cave form *Craspedosoma bollmani*, the male of which has the same peculiar knobs, but the tuberculation is different. From Harger's description of *C. glomeratum* this species seems to differ in having a dark median dorsal line, besides being of a larger size.

I have examined over a dozen specimens collected by Mr. Carl H. Eigenmann.

4. *Paradesmus dasya*, sp. nov.

Diagnosis.—Very similar to *Paradesmus gracilis* (Koch), but the tibia and tarsi of male tuberculate beneath; vertex pilose on each side of sulcus, first and penultimate segments with two rows of setæ, rest with one; copulation foot resembling that of *gracilis*.

Type.—U. S. Nat. Museum.

Habitat.—Baltimore, Md.

This species is very closely related to *Paradesmus gracilis*, as shown by the character of male genitalia, but is at once recognized by the characters given in the diagnosis. The following differences were also observed, which, except the characters of male genitalia, are not of much importance:

Dorsal plates somewhat wrinkled; repugnatorial pore (as compared with Saussure's figure of *P. coarctatus* = *P. gracilis*) not placed so far back nor the lateral carinæ so swollen; the end of the sheath inclosing the flagellum finely serrate as well as its branch; the other lobe widely three or four toothed; length of body, ♂ 15.5 to 20^{mm}, ♀ 17 to 22.5^{mm}.

I have examined three males and a number of females collected by Mr. Charles L. Edwards, of Johns Hopkins University.

5. *Polydesmus testi*, sp. nov.

Diagnosis.—Tuberculation as in *P. moniliaris* Koch,* but the lateral carinæ not finely serrated; tubercles setæ-tipped; male genitalia very similar to *Polydesmus inconstans* Latzel.†

**Polydesmus moniliaris* Koch, Syst. Myr., 135, 1847 (Pennsylvania) = *Polydesmus serratus* Wood, Trans. Amer. Philos. Soc., 215, 1865 (Pennsylvania).

†*Polydesmus inconstans* Latzel, Les Myr. Normandie, 21, 1883.

Type.—U. S. Nat. Museum.

Habitat.—Indianapolis, Ind.

Description of type.—Brown, legs and under parts paler. Slender, scarcely attenuated anteriorly, moderately shining. First dorsal plate transversely suboval, tubercles 10-6-8, setæ tipped; lateral margin one-toothed. Tuberculation of anterior segments rather indistinct, 4-4-6; posteriorly the first row is more obliterated, the second is usually composed of six tubercles, and those of the last row are acute and project beyond posterior border of segment; lateral margins three or four toothed. Legs long.

Male: Legs strongly crassate, last four joints tuberculate beneath; coxa of second pair much produced and the end of lobe pitted; femur not much swollen above; genitalia very similar to *P. inconstans* Latzel.

Length of ♂ 11.6^{mm}, width of first segment 1.1^{mm}, width of tenth, 1.3^{mm}; ♀ length 8.5^{mm}, width of first segment, 8^{mm}, width of tenth segment 1^{mm}.

This species is very closely related to the European *Polydesmus inconstans* Latzel, as is shown by the tuberculation and the form of male copulation foot, while it only resembles *P. moniliaris* Koch in tuberculation.

I have examined a male and a female, collected by Mr. Frederick C. Test, my friend and fellow-student, for whom the species is named.

6. *Polydesmus branneri*, sp. nov.

?? *Polydesmus pennsylvanicus* Koch, Syst. d. Myr., 133, 1847 (Pennsylvania); Koch, Die Myriopoden, ii, 18, pl. 69, fig. 142. 1863.

Diagnosis.—Very similar to *Polydesmus serratus* Say,* but body more depressed and attenuate anteriorly; antennæ and legs more slender and in the male less crassate.

Type.—U. S. Nat. Museum.

Habitat.—Mossy Creek, Jefferson County, Tenn.

As the characters of *P. serratus* vary exceedingly in respect to size and form, I have had considerable trouble in using characters exact enough to distinguish *P. branneri* from the various forms of *P. serratus*. The most important differences by which *P. branneri* is separated from *P. serratus* are those of the male genitalia; but as it is almost impossible to give a good definition of these characters, I have thought it best to say nothing now, but wait until I can have good figures made.

Concerning the male genitalia of *P. serratus*, I may say that in all the specimens I have examined from Minnesota, Illinois, Indiana, Pennsylvania, and North Carolina, I find that the characters are essentially similar, the only important variation being in the number of plate-like spines. I have thought that *P. branneri* may be identical with

* *Polydesmus serratus* Say, Journ. Phila. Acad. Nat. Sci., 106, 1820 = *P. canadensis* Newport, Ann. and Mag. Nat. Hist., 205, 1844 (Hudson's Bay) = *P. glaucescens* Koch, Syst. d. Myr., 133, 1847 (North America). † *P. pennsylvanicus* Koch, Syst. d. Myr., 133, 1847 (Pennsylvania).

Koch's *pennsylvanicus*, concerning which he says: "*Der Körper im Verhältniss zur Länge ziemlich breit, * * * die Seitenkanten der Seitenlappen glattrandig.*"

This is all of his description that is of any value; the first will fit both species, while the last will only suit *P. serratus*, for the serratures are present in *P. branneri*, although they are small.

I have never seen a specimen of *P. serratus* with the serratures obliterated, but concerning this Dr. Wood says:* "The serratures in the lateral margins of the side plates are very minute and frequently obsolete;" and Professor Saussure:† "*Ils le sont en effet, mais si finement qu'on ne distingue les dentelures qu'au moyen du microscope ou d'une forte loupe.*" Judging from these quotations, I am inclined to believe that *P. pennsylvanicus* is identical with *serratus*, or, at any rate, a species distinct from my *branneri*.

I have examined a number of specimens collected by Mr. Charles B. Branner, but most of them are broken. All the females in the collection are much smaller than the male, as the following measurements will show:

Measurements of Polydesmus branneri.

Sex.	Length of body.	Breadth of first segment.	Breadth of tenth segment.	Length of antennæ.
	mm.	mm.	mm.	mm.
♂	25.3	2.6	3.5	4.6
♂	24.8	2.9	3.	4.3
♀	18.6	2.6	2.9	3.2

7. *Fontaria evides*, sp. nov.

Diagnosis.—Coxa of second pair of legs produced into a blunt, cylindrical lobe; only lateral carinæ distinctly red.

Type.—U. S. Nat. Museum.

Habitat.—Mossy Creek, Jefferson County, Tenn.

Description of type.—Black, lateral carinæ, a spot on anterior border of first and on posterior border of penultimate segments red, antennæ brown, legs yellow, tarsal joints reddish, an indistinct row of reddish brown spots above lateral carinæ. Body depressed, anterior segments of male not attenuated, those of female very noticeable; first four segments moderately smooth, rest rough except along middle of back. Vertex, sulcus shallow, setigerous foveolæ present. Antennæ of male somewhat clavate, female filiform. First segment as in *Fontaria virginensis*. Lateral carinæ large and moderately produced. Repugnatorial pore rather large and placed on the upper edge of posterior third of carinæ. Ventral plate and coxa unarmed. Male: Coxa of first pair of feet produced into a blunt, cylindrical lobe, coxa of fourth pair moderately; femur of anterior legs swollen above; genitalia loosely coiled,

* Trans. Amer. Philos. Soc., 216, 1865.

† Essai d. Faun., Myr. Mex., 68, 1860.

expanded at middle third and slightly lobed; basal spine cylindrical. Length of body: ♂ 33^{mm}, height 5^{mm}, width of first segment 7.8^{mm}, width of tenth 9.5^{mm}, antennæ 7.7^{mm}; ♀, length of body 36.8^{mm}, height 6.3^{mm}, width of first segment 8^{mm}, width of tenth 10^{mm}, antennæ 7.1^{mm}.

This species is closely allied to the next, but differs very much in color and in the characters of the anterior segments, and male genitalia. I have seen a male and a female which were collected by Mr. Charles B. Branner. The female has a browner pattern of coloration and the red is not so vivid as in the male.

8. *Fontaria rubromarginata*, sp. nov.

Diagnosis.—Very similar to *Fontaria evides*, but the first three segments of male attenuated; vertex, sulcus deeper; femur more swollen; anterior border of first and posterior of other segments red.

Type.—U. S. Nat. Museum.

Habitat.—Balsam, Jackson County, N. C.

This species is closely related to the preceding. It differs, however, much in color and in the character of male genitalia. As compared with the male of *F. evides*, the following points may be worthy of note:

Browner, legs yellow; lateral plates not so sharp; legs of male more crassate; distal fourth of genitalia very much expanded near the end; basal spine stout, *bifid*; two lateral lobes, the first trifid, the other bifid; length of body, 38^{mm}; height, 5^{mm}; width of segment, 6.3^{mm}; width of tenth, 10^{mm}; antennæ, 8.3^{mm}.

The characters of ventral plates and coxæ are the same as in *F. evides*.

These notes are based upon a male collected by Prof. George T. Atkinson, which only has the right leg changed into a copulatory organ.

9. *Fontaria montana*, sp. nov.

Diagnosis.—Similar to *Fontaria trimaculata* (Wood) but larger, especially the breadth; dorsal plates less convex, lateral carinæ larger and more produced; legs of male less crassate, shining black, yellow spots very distinct, legs light brown.

Type.—U. S. Nat. Museum.

Habitat.—Wolf Creek, Cooke County, Tenn.

This species is very closely related to *F. trimaculata*, as is shown by the coloration and genitalia, but the latter are more strongly coiled and with the basal spine larger. Comparing the males of the two species, it may be said that in *F. montana* the different parts are larger, but more slender.

I have examined a male collected by Mr. Charles B. Branner. This species is the southern representative of *F. trimaculata*, but it is not probable that they will merge into one as the characters of the male genitalia are too much unlike.

Measurements of Fontaria montana.

Sex.	Length of body.	Width of first segment.	Width of tenth segment.	Length of antennæ.	Habitat.
♂	mm. 45	mm. 8.9	mm. 12.5	mm. 7.8	Wolf Creek, Tenn.

Measurements of Fontaria trimaculata (Wood).

♀	38.2	6.3	7.8	7	Syracuse, N. Y.
♀	38.8	6.4	7.6	5.4	Do.

10. *Geophilus oweni*, sp. nov.

Diagnosis.—(Frontal plate present, anal pores absent); coxal pores present, large and small, placed along and partly concealed by last ventral plate; pairs of legs, ♂ 67, ♀ 71.

Type.—U. S. Nat. Museum.

Habitat.—New Harmony, Posey County, Ind.

Description of type.—Orange, head darkest. Slender, slightly attenuated posteriorly, smooth, legs sparsely pilose. Prehensorial legs sparsely pilose and punctate, swollen; sternum wider than long (8:7); coxa a little longer than wide (3.5:3), unarmed; tooth small, acute. Cephalic plate quadrate, scarcely narrowed anteriorly; posterior end broadly truncate, slightly emarginate, and concealing part of basal plate; basal plate nearly thrice as wide as long.

Antennæ short, joints moderately long, penult. and antepenult. subequal. Dorsal plates sparsely punctate, bisulcate; anterior predorsal plates short; median, one and a half times as long, posterior twice. Spiracles round, anterior moderately large, median and posterior small.

First pair of feet short, robust, anterior and posterior subequal, but former stouter; anal legs armed. Coxa of anal legs considerably swollen, posterior border densely pilose; pores about ten, large and small and mostly concealed by last ventral plate; last ventral plate wide (3:2), side barely rounded and converging, pilose.

Pairs of legs: ♂ 67, slightly crassate, densely pilose; ♀ 71, slender and sparsely pilose. Length of ♂ 30^{mm}, width 1^{mm}; ♀, length 43.5^{mm}, width 1.2^{mm}.

This species is described from a male and female collected by Dr. Richard D. Owen, of New Harmony, Ind., and to whom I have the pleasure of dedicating it. I have thought it best to introduce the following analytical key in order to show the relations of *G. oweni* as well as those of some others recently described, belonging to that section of *Geophilus* which has the last ventral plate wide.

Last ventral plate wide.

a. Frontal plate present.

b. Anal pores absent.

Coxal pores two; anal legs of male strongly crassate; pairs of legs, ♂ 47 to 49, ♀ 51 to 53; dorsal plates with a broad, double, black median line.....*cephalicus* WOOD.

cc. Coxal pores more than two.

d. Pairs of legs, ♀ 51; coxa of anal leg not strongly inflated, pores large, ten or twelve, subseriate.....*mordax* MEINERT.

dd. Pairs of legs, ♀ 71, ♂ 67; coxa of anal legs strongly inflated; pores about same number, large and small, partly concealed by ventral plate.....*oreni* BOLLMAN.

aa. Frontal plate absent.

b. Anal pores absent.

c. Coxal pores absent; coxa of prehensorial legs armed; pairs of legs, ♂ 67 to 69, ♀ 61 to 65.....*bipuncticeps* WOOD.

cc. Coxal pores present.

d. Coxal pores one, concealed; prebasal plate concealed; coxa of prehensorial feet twice as long as wide; pairs of feet, ♀ 61.....*georgianus* MEINERT.

dd. Coxal pores two.

e. Prebasal plate concealed; anterior coxal pore hidden by ventral plate; teeth of prehensorial legs distinct; pairs of legs, ♂ 67 to 69, ♀ 61 to 66.....*perforatus* (McNEILL).*

ee. Prebasal plate exposed as in *cephalicus*; coxal pores like *perforatus*; teeth of prehensorial legs very indistinct; pairs of legs, ♂ 61, ♀ 63.....*okolona* BOLLMAN.†

bb. Anal pores present; coxal pores arranged in two partly covered series; pairs of legs, ♀ 61.....*latro* MEINERT.

11. *Geophilus californiensis*, sp. nov.

Diagnosis.—(Frontal plate absent; anal pores present); attenuated from head backwards; coxa of prehensorial legs unarmed; antennæ long; coxal pores rather large, over 30; pairs of legs, ♀ 64 to 67.

Type.—U. S. Nat. Museum.

Habitat.—Ukiah, Cal.

This species may be easily separated from those which have the "frontal plate absent and anal pores present" by the characters assigned in the diagnosis.

The following is a complete description of type:

Reddish orange, head darkest, rather robust, widest before, moderately smooth, sparsely pilose. Prehensorial legs reaching to base of second antennal joint; coxa longer than wide (4.5:3), unarmed; tooth small. Cephalic plate sparsely pilose and punctate, the latter forming two sulcations, longer than wide (7:5); basal plate partly concealed, thrice as wide as long; prebasal not exposed. Antennæ long, joints long, penult. and antepenult. shortened.

Dorsal plates distinctly bisulcate; anterior predorsal plates short, posterior longest; ventral plates with an indistinct median depression. Spiracles round, anterior large, median and posterior small. First pair of legs short, anterior and posterior subequal, former stouter.

Coxa of anal legs strongly swollen, pores rather large, over 30; last ventral plate moderately wide (1.5:2), sides converging.

* *Schendyla ? perforatus* McNeill, Proc. U. S. Nat. Mus., 325, 1887. (Pensacola, Fla.)

† *Geophilus okolona* Bollman. Ent. Amer., 5, 1888. (Okolona, Ark.)

Pairs of legs, ♀ 64 to 67. Length of body, ♀ 36^{mm}; width 1.2^{mm}.

I have examined a number of specimens collected by Mr. J. H. Burke, of Ukiah, Cal. This species should be placed near *G. occidentalis* Meinert, although it seems to bear little relation to the latter.

12. *Lithobius eigenmanni*, sp. nov.

Diagnosis.—Allied to *Lithobius obesus* Stuxberg, but the claw of female genitalia tripartite; spines of anal feet 1, 3, 3, 0; coxal pores more numerous.

Type.—U. S. Nat. Museum.

Habitat.—Glacier, British Columbia.

Description of type.—Brown, feet paler, slender, moderately rough posteriorly; head scarcely wider than long. Antennæ short, articles 20, short. Ocelli 8 to 12, arranged in 4 or 5 series. Prosternal teeth 2 + 2. Coxæ of 13, 14, 15 pairs of legs laterally armed. Coxal pores 3, 4, 4, 3 to 4, 5, 5, 5, large and round. Spines of first pair of feet 1, 2, 1; penultimate pair 1, 3, 3, 0 to 1, 3, 3, 1; anal pair 1, 3, 3, 0. Claw of female genitalia tripartite; spines (2 + 2) stout and short, inner shortest.

Length of body 7.5 to 9^{mm}, width 1.1 to 1.5^{mm}; antennæ 3 to 3.5^{mm}; anal legs 3.2 to 3.8^{mm}.

I have examined a number of specimens collected by Mr. Carl H. Eigenmann, to whom I take great pleasure in dedicating this species.

13. *Lithobius atkinsoni*, sp. nov.

Diagnosis.—Anal and penultimate pairs of legs each armed with a single claw; joints of antennæ 26, color chestnut.

Type.—U. S. Nat. Museum.

Habitat.—Balsam, Jackson County, N. C.

Description of type.—Chestnut, head and antennæ of a deeper shade, legs orange. Slender, dorsal plates moderately smooth, especially anteriorly, very sparsely pilose; head obcordate, length and width subequal. Antennæ short, reaching to fifth segment, joints 26, small. Ocelli 14–5. Prosternal teeth 5 + 5, small. Coxa of the (♂) pairs of feet laterally armed. Coxal pores 4, 5, 5, 4, small and round. Spines of first pair of legs 2, 1, 1; penultimate and anal pairs 1, 3, 3, 2. Anal legs somewhat swollen, tarsæ of anal and penultimate pairs of legs sulcate on inner side. Claw of female genitalia short, tripartite; spines 2 + 2, inner shortest.

Length of body 12.5^{mm}, width 1.8^{mm}; antennæ 4^{mm}; anal legs 5^{mm}.

This species bears no relation to any known from North America; in fact, it is the only one of the subgenus *Lithobius* with the penultimate pair of legs armed with a single claw.

I have examined one specimen collected by Prof. George F. Atkinson, of the University of North Carolina, to whom I have the honor of dedicating this species.

14. *Lithobius tyrannicus*, sp. nov.

Diagnosis—Related to *Lithobius latzeli* Meinert, but the coxal pores transverse; claw of female genitalia much longer and indistinctly tripartite; size larger.

Type.—U. S. Nat. Museum.

Habitat.—Greencastle, Bloomington, Salem, and New Providence, Ind.

Description of type.—Brown, more chestnut than *L. latzeli*; legs fulvous. Robust, rough, especially posteriorly; head wider than long (6:5). Antennæ moderately long, attenuate, joints 31 to 36, short. Ocelli 32–7 to 45–9. Prosternal teeth 6 + 6 to 8 + 8. Coxa of anal legs unarmed beneath, those of the 13, 14, 15 legs laterally armed. Spines of first pair of legs 2, 2, 1; penultimate and anal pairs 1, 3, 3, 1 or 1, 3, 3, 2. Coxal pores: ♂, 6, 7, 7, 5 to 8, 8, 8, 6; ♀, 7, 8, 8, 7 to 8, 9, 8, 7.

Male: Femur, tibia, and first tarsal joints of anal legs sulcate beneath, last two tarsal joints sulcate on inner side, tibia depressed and sulcate above; penultimate pair of legs the same, but tibia not flattened and sulcate above.

Female: Anal and penultimate pairs of legs similar to the penultimate pair of male; claw of genitalia long and stout, indistinctly tripartite, middle lobe much longer, inner smallest.

Length of body 18.5 to 26^{mm}, width 2.5 to 3.8^{mm}; antennæ 8 to 12^{mm}; anal legs 9 to 12^{mm}.

I have compared this species with a series of *L. latzeli* from Chapel Hill, N. C., and find in the latter the following differences worthy of notice: Coxal pores ♂, 4, 5, 5, 4 to 6, 6, 6, 5; ♀, 5, 5, 6, 5, to 5, 7, 6, 5; of female genitalia rather short and wide, distinctly tripartite, middle claw lobe somewhat the longest.

Length of body 16 to 22^{mm}, width 1.8 to 2.6^{mm}; antennæ 8 to 11^{mm}, anal legs 7.8 to 10^{mm}.

My description of *Lithobius mordax*, Proc. U. S. Nat. Mus. 262, 1887, applies in part to this species.

As several other species belonging to the subgenus *Neolithobius* have been recently described, I have compiled the following analytical key to help elucidate a few points as well as to correct some errors:

ANALYSIS OF THE SPECIES OF NEOLITHOBIUS.

- a. Anal legs armed with a single claw, coxæ not armed beneath.
- b. Coxal pores in a single series, round.
- c. Penultimate pair of feet armed with a single claw; antennæ 30 to 40, jointed; prosternal teeth 5 + 5 or 6 + 6; last two tarsal joints of anal legs sulcate on inner side.....*transmarinus* KOCH.
- cc. Penultimate pair of feet armed with a double claw.
- d. Prosternal teeth 4 + 4 or 5 + 5; antennæ 26 to 34, jointed; tarsal joints of anal legs not sulcate; orange or light chestnut.....*clarus* McNEILL.
- dd. Prosternal teeth 6 + 6 to 8 + 8; antennæ 32 to 35, jointed; tarsal joints of anal legs sulcate on inner side, brown.....*latzeli* MEINERT.

- bb. Coxal pores in a single series, transverse.
- c. Penultimate pair of legs armed with a single claw; antennæ 30 to 38, jointed; prosternal teeth 6 + 6 or 7 + 7; last two tarsal joints of anal legs distinctly or not sulcate.....*mordax* KOCH.
- cc. Penultimate pair of legs armed with a double claw.
- d. Last two tarsal joints of anal legs sulcate on inner side, likewise the penultimate pair; antennæ 31 to 36, jointed; prosternal teeth 6 + 6 to 8 + 8; length of body 18 to 26^{mm}.....*tyrannicus* BOLLMAN.
- dd. Last two tarsal joints of anal and penultimate pairs of legs not sulcate; antennæ 40 to 49, jointed; prosternal teeth 6 + 6 to 11 + 11; length of body 20 to 37^{mm}.....*vorax* MEINERT.
- bbb. Coxal pores in several series; claws of penultimate pair of feet two; joints of antennæ 40 to 47; ocelli 13-4 to 26-5; prosternal teeth 8 + 8 to 10 + 10; claw of female genitalia not divided.....*terreus* FEDRIZZI.
- aa. Anal and penultimate pairs of legs each armed with two claws; coxal pores in a single series, round; coxa not armed beneath; antennæ 31 or 32, jointed; prosternal teeth 2 + 2; spines of first pair of feet 1, 1, 1.
juventus BOLLMAN.

In the above key I have introduced the European species, *Lithobius terreus* Fedrizzi; I can not find any true specific characters to separate *Lithobius leptopus* Latzel from it.

Concerning the geographical distribution of these species I may say that *transmarinus* has been found in Louisiana, Arkansas, and Indian Territory; *clarus* in Florida; *latzeli* in Virginia and North Carolina; *mordax* from Florida to Indian Territory, then north to Minnesota; *tyrannicus* in Indiana; *vorax* from Mississippi to Indian Territory; and *juventus* in Indiana and Tennessee.

INDIANA UNIVERSITY, January 20, 1888.

[From Ann. N. Y. Ac. Sc., IV, 1887, pp. 25-44.]

NOTES ON NORTH AMERICAN JULIDÆ.

BY CHARLES H. BOLLMAN.

[Read February 28, 1887.]

The following paper is based upon material of this family embraced in the entomological collection in the Museum of the Indiana University.

In connection with the description of the new species, it has also been deemed best to introduce descriptions of those already known to science.

The types of the new genera and species are deposited in the above museum.

Family A.—JULIDÆ Leach.

Genus I.—JULUS Linn.

Julus Linnæus, Syst. Nat., Ed. x, 1, 639, 1758.

This genus differs from *Parajulus* in the mandibular combs being four; the first segment of an equal size in both sexes; the second pair of feet not stunted; and the first pair of the male small, three-jointed, the last joint large and uncinatè.

As the subgenera of this genus are very much confused, I have not attempted to give a key to those to which the following species belong.

1. *Julus* *Owenii*, sp. nov.

Pale brown, a lateral series of dark brown spots, first dorsal plate with a brown band along the anterior border; a brown band between the eyes; a pale oval spot at the base of antennæ; feet and antennæ pale. Moderately slender, not smooth, not pilose. Vertex rough; a faint median sulcus; setigerous foveolæ absent. Antennæ subclavate, equal to the width of body. Eyes indistinct, subcircular; ocelli not always filled out, about 28, arranged in 6 or 7 series. Segments 38-40. First segment unusually thin, advanced forward to the eyes; sides striate. Other segments moderately striate both above and below. Last segment rounded; anal valves not marginate, not pilose; anal scale triangular. Repugnatorial pore moderately large, longitudinally oval, touching the transverse suture, which is excised. Pairs of feet 54-66, rather stout, equaling the width of body. *Male*: mandibular

stipes not much produced beneath. First pair of legs small, strongly uncinatè. Genitalia concealed. Length of body 11.4–13.5^{mm}; width, 7–8^{mm}.

Habitat.—New Harmony, Indiana.

I have examined two males of this species, collected by Dr. Richard Qwen, of New Harmony, Indiana, after whom the species is named.

This species belongs to the sub-genus *Allajulus* as defined by Latzel.

2. *Julus virgatus* Wood.

Julus virgatus Wood, Proc. Acad. Nat. Sci., Phila., 14, 1864.

Fulvous-brown, a black median and two lateral bands, a dark band between eyes; joints of antennæ tipped with black, feet pale. Slender, nearly smooth; a row of hairs along the posterior border of each segment. Vertex smooth; a faint median sulcus; setigerous foveolæ present. Antennæ moderate, subclavate, equaling width of body. Eyes distinct, triangular or trapezoidal; ocelli 25–40, arranged in 6–7 series. Segments 30–35. Sides of first segment marginate; other segments striate both above and below, but more so in the latter; last segment rather sharply rounded, sparsely pilose; anal valves scarcely marginate, smooth, pilose; anal scale triangular, rather large, pilose. Repugnatorial pore small, partly concealed by the transverse suture, which is moderately excised. Pairs of feet, 50–65, not equaling width of body, rather stout, sparsely pilose. *Male*: mandibular stipes moderately produced beneath. First pair of feet short, scarcely thickened, strongly uncinatè. Genitalia half concealed; anterior plate entirely concealed, except the end; large, flat, the ends turning outwards, rounded; posterior plate composed apparently of three pieces, strongly twisted together at base, anterior part expanded at the end, ending in an inward curving spine, middle part not expanded, end pointed, posterior blade-like, pointing inwards and projecting out on the inner side of the others, the tip rounded. Flagellum not detected. Length of body, 8–12^{mm}; width, .7–1^{mm}.

Habitat.—Pennsylvania, District of Columbia, and Indiana.

I have examined numerous specimens of this species from Bloomington, Indiana, where it seems to be common in orchards and pastures having a thick growth of grass.

The females are considerably more robust than the males.

3. *Julus minutus* Brandt.

Julus pusillus Say, Journ. Acad. Nat. Sci., Phila., 106, 1821 (preoccupied).

Julus minutus Brandt, Recueil, 89, 1840.

Brown, a lateral row of ovate, black spots; feet pale; antennæ black and white; a dark band and three white spots, forming a Δ between the eyes. Slender, finely wrinkled above, not pilose. Vertex with a very faint median sulcus; setigerous foveolæ absent. Antennæ moderate, equaling the width of body. Eyes distinct; ocelli, 8 or 9, ar-

ranged in a single, longitudinal, curved series behind the antennæ. Segments, 35-45; sides of the first segment striate; other segments moderately striate beneath; last segment rounded, pilose; anal valves not marginate, pilose; anal scale small, rounded, pilose. Repugnatorial pore placed in the posterior division, small, not touching the transverse suture, which is straight. Pairs of feet, 55-70; slender, not extending beyond the sides of body, sparsely pilose. Length of body, 9-12^{mm}; width, 0.5-0.8^{mm}.

Habitat.—Virginia, Florida, and Indiana.

I have examined a number of females of this species from Bloomington, Ind., and also the types of *Julus lineatus* McNeill, Mss. (Pensacola, Fla.), but I can not find any difference between them and my other specimens, which I have identified with *minutus*. Specimens not in full color have the lateral row of spots bronze-red, and with a backward-pointing branch, at the upper posterior side.

Young individuals differ as follows:

Length.	Width.	Eyes (ocelli).	Seg- ments.	Pairs of legs.
<i>mm</i>	<i>mm</i>			
6.2	0.4	5	32	46
6.3	0.5	5	33	48

4. *Julus stigmatosus* Brandt.

Julus punctatus Say, Journ. Acad. Nat. Sci. Phila., 102, 1821 (preoccupied).

Julus stigmatosus Brandt, Recueil, 88, 1840.

Pale brown; posterior border of segments dark; a lateral row of brown spots; antennæ dark, feet pale. Slender, smooth, shining, not pilose. Vertex without a median sulcus, setigerous foveolæ present. Antennæ subclavate, exceeding the width of body. Eyes distinct, triangular or subrotund; ocelli 20-40, arranged in 5-7 series. Segments, 35-45. Sides of first segment striate. Other segments moderately striate beneath; last segment smooth, obtusely rounded, pilose; anal valves not marginate, pilose; anal scale small, rounded, pilose. Repugnatorial pore small, placed in the posterior division, not touching the suture, which is straight. Pairs of feet, 50-75, slender, extending beyond the sides of body, sparsely pilose. *Male*: mandibular stipes not much produced beneath. First pair of legs short and thick, uncinate, sparsely pilose. Genitalia exposed. Length of body, 8-13^{mm}; width, 0.5-0.8^{mm}.

Habitat.—Virginia and Indiana.

I have examined about a dozen specimens of this species. It varies somewhat in the shades of color, some being almost black. Only having one full grown male, I have not attempted to give a description of the genitalia.

One young specimen differs from the adult as follows:

Length, 7^{mm}; width, .4^{mm}; eyes (ocelli), 19-5; segments, 33; feet, 39.

Genus II.—SPIROBOLUS Brandt.

Spirobolus Brandt, Bull. Soc. Imp. Nat. Mos., 202, 1833.

The subgenera are defined as follows:

- a. Basal part of the dorsal plates without scobina.....SPIROBOLUS Karsch.
 aa. Basal part of the dorsal plates with scobina.....RHINOCRINUS Karsch.

Subgenus *Rhinocrinus*.5. *Spirobolus marginatus* (Say).*Julus marginatus* Say, Journ. Acad. Nat. Sci. Phila., 105, 1821.*Spirobolus marginatus* Wood, Trans. Amer. Philos. Soc., 207, 1865.

Dark brown; segments edged with brownish fuscous; first and last segments green or brown; feet and antennæ brownish-red. Robust, not attenuated anteriorly, the anterior four or five segments somewhat depressed, not smooth. Vertex smooth, with faint reticulating lines, sparsely punctate, most numerous between and behind eyes; median sulcus interrupted; clypeal foveolæ 8-10. Antennæ short, not reaching the posterior border of first segment. Eyes indistinct, subtriangular; ocelli, 30-40, arranged in 6 series. Segments, 47-52. First segment with the sides subacute, marginate, the anterior border nearly straight, densely punctate; second segment produced forward into a moderately large subquadrate plate. Other segments equally punctate on both divisions, striæ moderate, decurved beneath. Last segment pointed, but not extending beyond the anal valves, finely punctate; anal valves marginate; punctate; anal scale obtusely angled, punctate. Repugnatorial pore placed on the anterior division, large, transverse suture bent. Pairs of feet, 88-103, extending beyond the sides of body. *Male*: the two anterior pairs of feet more robust than the rest; coxæ of the 3-4 pairs most produced. Ventral plate produced into a short, rounded lobe. Genitalia: internal part of the anterior plate not higher than the ventral plate, external part with the tip somewhat rounded, produced backwards and outwards; posterior plate divided at the base, the outer grooved, through which runs the inner, ends of both rounded and more or less roughened. Length of body, 45-100^{mm}; width, 5-10^{mm}.

Habitat.—Eastern United States.

I have examined numerous specimens of this species from Bloomington, Ind., and one large female from Brooksville, Ind., collected by Mr. Amos Butler. Specimens 50^{mm} long differ in color from the full grown examples, by being dark green.

Young individuals differ from adults as follows:

Length.	Width.	Segments.	Pairs of feet.	Eyes.
<i>mm.</i>	<i>mm.</i>			
18.	2	42	76	18-5
16.5	2	41	65	21-5
16	2	39	62	19-5
8	1	27	32	6-3

6. *Spirobolus pensacolæ*, sp. nov.

Dark green above, segments margined with reddish-brown; face, anterior and posterior segment bright green; feet and antennæ lighter than in *marginatus*. Moderately robust, attenuated before, the twelve anterior segments somewhat flattened or crassate beneath, not smooth. Vertex smooth, sparsely punctate; punctations not more numerous between the eyes, median sulcus interrupted; clypeal foveolæ 8. Antennæ short, not quite reaching the posterior margin of anterior segment. Eyes distinct, trapezoidal; ocelli, 45, arranged in 7 series. Segments, 49. First segment with the sides subacute, marginate, anterior border sinuate; second segment with the lobe less broad and more triangular than in *marginatus*. Other segments moderately rough, punctations most numerous on the posterior division; striæ decurved, strong and rib-like on the posterior division of the segments. Last segment pointed, not passing the anal valves, densely punctate; anal valves marginate, rough; anal scale rounded. Repugnatorial pore large, placed on the anterior division; suture moderately bent. Pairs of feet, 92, moderately extending beyond the sides of the body. Length of body, 80^{mm}; width, 9^{mm}.

Habitat.—Pensacola, Florida.

I have had one female of this species for examination. It is more related to *marginatus* than any other of our North American species. From *marginatus* this species is easily separated by the distinct attenuated body, clypeal foveolæ, form of second segment, arrangement of the ocelli, and color.

7. *Spirobolus uncigerus* Wood.

Spirobolus uncigerus Wood, Proc. Acad. Nat. Sci. Phila., 15, 1864 (California).

Dark brown, edge of segments lighter, an indistinct light median line; feet chestnut. Moderately robust, a little crassate, not attenuated, only a few anterior segments flattened beneath, not smooth. Vertex moderately smooth, distinct reticulating lines, sparsely punctate, median sulcus interrupted; clypeal foveolæ 8. Antennæ short, not reaching the posterior border of anterior segment. Eyes indistinct, subtriangular; ocelli, 32, arranged in 7 series. Segments, 49. First segment with the sides acute, marginate, anterior margin excised, rough, densely punctate; second segment moderately produced beneath, rounded in front. Other segments rough, densely punctate; numerous short lines, striæ strong, not much decurved. Last segment acutely rounded, not passing the anal valves, densely punctate; anal valves marginate; anal scale rounded. Repugnatorial pore moderately large, placed in the anterior part, sulcus extending backwards, deep, transverse suture bent. Pairs of feet, 86, equaling the width of body. *Male*: coxæ of the third pair of feet produced from beneath into a long, spatulate appendage. Ventral plate moderately produced in the middle into a sharp point. Genitalia: inner part of the anterior plate

twice as high as ventral plate, inner angle somewhat pointed, rough, external part somewhat curved, the tip a little produced, rough; posterior plate sickle-shaped, the end slender and sharp, serrated beneath at about the middle. Length of body, 45^{mm}; width, 5^{mm}.

Habitat—Ukiah, California.

I have examined one male of this species from the above locality, which was collected by Mr. James K. Burke.

8. *Spirobolus hebes* sp. nov.

Dark ochreous brown, segments not edged with a different color; a lateral row of small black spots; feet lighter. Robust, not attenuated: the anterior 2-5 segments somewhat crassate, not smooth. Vertex smooth, sparsely punctate, median sulcus interrupted; clypeal foveolæ 8. Antennæ short, about reaching the posterior margin of anterior segment. Eyes distinct, subtriangular, sides rounded; ocelli 29-38, arranged in 6 series. Segments 39-41. First segment acute, more so in male than female, marginate, rather smooth; second segment strongly produced beneath, triangular and rounded. Other segments not smooth, sparsely punctate, also numerous impressed lines, striæ moderate, strongly decurved beneath. Last segment obtusely rounded, moderately smooth; anal valves not marginate; anal scale rounded. Repugnatorial pore small, placed in the anterior division, suture angularly bent. Pairs of feet, 76-79, not extending beyond the sides of body. *Male*: coxæ of the 3-6 pairs of feet produced more than the others; trochanter of the first and second pairs large, as well as the two anterior pairs of legs are stouter than the rest. Ventral plate smooth, triangular, somewhat swollen near the outer edge. Genitalia: inner part of the anterior plate twice as high as the ventral plate, end rounded, numerous short tubercles on the anterior surface, outer part finger-like, moderately wide, end rounded and not turned outwards, smooth; posterior plate thick and somewhat curved, a short blunt lobe at base on the inner side, above this a sharp and thin one, the end small, thick and rounded, beneath produced into two serrated plates. Length of body, 45-50^{mm}; width, 7-8^{mm}.

Habitat—San Diego, California.

This species is described from a male and a female, collected by Miss Rosa Smith.

9. *Spirobolus californicus* (Humbert and Saussure).

Spirostreptus californicus Humb. & Sauss., *Revue et Mag. Zool.*, 177, 1870 (California).

Black, segments not edged with rufous, feet and antennæ not or scarcely paler. Robust, not attenuated before, a few of the anterior segments crassate, not smooth. Vertex rough between the eyes, smooth elsewhere, a few wrinkles in front, median sulcus interrupted; clypeal foveolæ 8. Antennæ moderate, reaching the posterior border of ante-

rior segment. Eyes indistinct, sub circular; ocelli 45, arranged in 8 series. Segments, 48. Sides of first segment acute, marginate, anterior border sinuate, moderately smooth; second segment strongly produced and turned forwards, the lobe quadrate. Other segments densely punctate, and with numerous short lines; striæ moderate, concentric. Last segment rounded, smooth; anal valves not marginate; anal scale transverse. Repugnatorial pore small, placed in the anterior division, suture bent. Pairs of feet, 90, about equaling the width of body. Length of body, 75^{mm}; width, 10^{mm}.

Habitat—St. Vincent, Lower California.

I have one broken example of this species from the above locality, collected by Mr. Charles R. Orcutt, of San Diego, Cal. The specimen before me agrees with the short description given in the journal cited above.

10. *Spirobolus spinigerus* Wood.

Spirobolus spinigerus Wood, Proc. Acad. Nat. Sci. Phila., 15, 1864 (Florida and South Carolina).

Dark greenish brown or black, segments edged with brownish red, feet and antennæ red. Moderately robust, anterior segments somewhat attenuate, barely crassate, only the anterior and posterior segments punctate, rest smooth. Vertex smooth, very finely and sparsely punctate, punctations not numerous between eyes, sulcus barely continuous; clypeal foveolæ 10–12. Antennæ moderate, usually reaching the middle of second segment. Eyes indistinct, subtriangular; ocelli, 35–45, arranged in 6 or 7 series. Segments, 45–52. First segment with the sides subacute, marginate, anterior margin sinuate, smooth, finely punctate; second segment not much produced beneath. Other segments smooth, not punctate, striæ of the anterior segments weak, not much decurved, more so posteriorly. Last segment smooth, finely punctate, pointed, but not passing the anal valves; anal valves moderately smooth, marginate; anal scale rounded. Repugnatorial pore large, placed on the anterior part, suture bent. Pairs of feet, 84–98, not extending much beyond sides of body. *Male*: coxæ of the third and fourth pairs of feet produced into long appendages. Ventral plate produced into a lobe, as in *marginatus*, but longer and more slender. Genitalia: inner part of anterior plate higher than the ventral lobe, rough, sinuate on the upper edge near the outer side, external part with the end curved sharply backwards and outwards; posterior plate divided as in *marginatus*, upper lobe or part grooved, the end rounded, a sharp, robust spine on the inner side, the lower or inner lobe thin, the end angular. Length of body, 60–80^{mm}; width, 5–9^{mm}.

Habitat.—Florida and South Carolina.

I have examined numerous specimens of this species from Pensacola, Florida.

Young examples differ from the adults as follows:

Length.	Width.	Segments.	Pairs of feet.	Ocelli.
<i>mm.</i>	<i>mm.</i>			
25	2.5	50	80	24-6
27	3.	49	81	25-6
24	2.5	44	65	15.5
22	2.3	43	70	19-6

Genus III—PARAJULUS Humbert and Saussure.

Parajulus Humbert and Saussure, *Revue et Mag. Zool.*, 155, 1869 (*olmecus*).

Eyes triangular, elliptical or trapezoidal; ocelli numerous, not arranged in more than ten series. Antennæ subfiliform, scarcely subclavate, second joint longest. Mandibular combs, 9-10. Gnathochilarium scarcely subspatulate; stipes not separated; mentum bipartite, almost hidden; lingual plate separated; lingual lobes denticulated. Number of segments uncertain, 40-70; sides striate. Last segment more or less produced into a spine; anal scale triangular or somewhat rounded. Depugnatorial pore beginning on the sixth segment, placed in the posterior part. Third segment apodous. Feet equaling the width of body, seventh joint longer than third; second pair of feet very strongly stunted or dwarfed. *Male*: First pair of legs enlarged, six-jointed, the fourth largest.

To this genus have been referred our larger species of so-called *Julus*; from the latter genus it is easily separated by the number of mandibular combs, by the second pair of legs, and the first pair of the male.

This genus is divisible into the following subgenera:

* *Male*: Promentum very large, ovate, narrowing the lingual plates; first segment enlarged, sides very broad, almost subquadrate; first pair of feet very large, crassate, curving inwards and crossing each other, armed with numerous tubercles on the inner side, moderately pilose PARAJULUS I.

** Promentum and first segment same size in both sexes; first pair of feet of male small, stumpy, crassate and straight, tubercles absent, sparsely pilose.

PSEUDJULUS, subgen. nov. II.

Subgenus *Parajulus*.

11. *Parajulus impressus* (Say).

Julus impressus Say, *Jour. Acad. Nat. Sci., Phila.*, 103, 1821.

Chestnut brown, the median line and a lateral row of spots black, also an indistinct row of large dark spots partly covered by the feet; segments above with two short light lines, and pale spots on each side of the lateral line; feet pale; line between the eyes not very dark. Moderately slender, not pilose or smooth. Vertex with a median sulcus, setigerous foveolæ present. Antennæ long and slender, equal to the width of the body, moderately pilose. Eyes distinct, triangular, the

sides somewhat rounded; ocelli, 40–60, arranged in 7–10 series. Segments, 45–55. First segment with the sides striate. Other segments not deeply striate, numerous indistinct wavy striæ above. Last segment with a moderate short spine, not projecting beyond the anal valves, sparsely pilose; anal valves smooth, sparsely pilose, scarcely marginate; anal scale triangular, sparsely pilose. Repugnatorial pore moderate, oval or round, partly hidden by the transverse suture, which is sharply emarginate. Pairs of feet, 70–90, equaling width of body, rather stout, sparsely pilose. *Male*: Mandibular stipes rather strongly produced beneath. First pair of feet large, long, not much curved, the inner surface with numerous tubercles, a few spinous ones near the base, sparsely pilose. Coxæ of the second pair of feet produced into a long, parallel appendage, the tip rounded, very sparsely pilose. Genitalia fully exposed, composed of three pieces; anterior plate moderately long, round, slightly twisted, the end scarcely clavate, turning outwards, densely pilose; middle plate large and thin, forming a tube; posterior plate sickle-shaped, the end bifid, inner or under edge strongly serrated, a thin lanceolate spine springing from the base. Flagellum not detected. Length of body, 18–32^{mm}; width, 1.8–2^{mm}.

Habitat.—Georgia, Illinois, Indiana, Michigan, and Minnesota.

I have examined specimens of this species from Ludington, Michigan, and Chauncey, Indiana; those from the latter place are larger and darker in color.

Wood's plate of the genitalia does not show the serrations, etc., of the posterior plate, nor the true form of the middle plates.

Specimens not adult vary as follows:

Length.	Width.	Segments.	Pairs of feet.	Ocelli.
<i>mm.</i>	<i>mm.</i>			
10.4	.9	48	73	30-6
9.6	.85	47	70	26-6
11.2	.92	46	75	27-6
11.8	.9	45	65	38-7
8.3	.75	40	54	22 5

12. *Parajulus ellipticus*, sp. nov.

Color almost similar to that of *J. impressus*, but darker, feet pale. Moderately robust, not smooth or pilose, shining, somewhat attenuated before. Vertex smooth, a median sulcus, setigerous foveolæ present. Antennæ not equaling width of body, densely pilose. Eyes distinct, almost elliptical, ocelli somewhat crowded, 40–48, arranged in 6–8 series. Segments, 47. First segment moderately large, sides striate. Other segments rather deeply striate, rough, with numerous short wavy striæ. Last segment produced into a moderately large, robust spine, projecting beyond the anal valves, sparsely pilose; anal valves smooth, not marginate, sparsely pilose; anal scale obtusely triangular, rather large. Repugnatorial pore small, not touching transverse suture, which is

scarcely emarginate. Pairs of feet, 71, extending beyond sides of body, moderately stout, sparsely pilose. Length of body, 28–30 millimeters; width, 2.3–2.5 millimeters.

Habitat.—Fort Snelling, Minnesota.

I have examined two female specimens, collected by Mr. Walter D. Howe.

From *castaneus* it is distinguished by the eyes, repugnatorial pore and anal scale; it is also more robust, and differs somewhat in color.

13. *Parajulus castaneus*, sp. nov.

Color much as in *J. impressus*, but the lateral line of spots larger and confluent posteriorly, a very dark line between the eyes, feet dark. Moderately slender, rough, not pilose. Vertex very finely wrinkled, a faint median sulcus, setigerous foveolæ present. Antennæ moderate, equaling width of body. Eyes distinct, triangular; ocelli, 54, arranged in 8 series. Segments, 42–51. Sides of first segment striate. Other segments deeply striate; above numerous fine striæ which have a number of short branches. Last segment produced into a moderate spine, which projects beyond the anal valvæ, not pilose; anal valves not marginate, very sparsely pilose; anal scale obtusely rounded, rather small, pilose. Repugnatorial pore moderate, touching the transverse suture, which is sharply sinuate. Pairs of feet, 66, equaling width of body, rather slender, sparsely pilose. *Male*: Mandibular stipes strongly produced beneath. First pair of feet large, uncinatè, numerous tubercles on the inner surface, pilose. Coxæ of the second pair as in *J. impressus*. Genitalia about half concealed, composed of three parts; anterior plate round, the end strongly clavate, pilose; the middle plate rounded, curving up in front of anterior and then backwards between it, where it expands into an elongate, wavy plate; on the inner side it is divided into three lobes or spines, the anterior large and placed at the beginning of the expansion, the second small and placed near the end, which is somewhat serrated, a lanceolate spine springing from the base; posterior plate whip-like, curving upwards and inwards until they meet, and then outwards. Flagellum not detected. Length of body, 30^{mm}; width, 2^{mm}.

Habitat.—Fort Snelling, Minnesota.

I have examined one male and one female, in a broken condition, collected by Mr. George Howe.

14. *Parajulus pennsylvanicus* (Brandt).

Julus pennsylvanicus Brandt, Recueil, 85, 1841.

Dark brown, a black median line and a lateral row of spots, feet pale. Moderately robust, rough, pilose, each segment except the first having two rows of setigerous foveolæ placed on the posterior division, the first row on the anterior third and the other along the posterior border. Vertex with a faint median sulcus, setigerous foveolæ present. An-

tennæ long, equal to the width of body. Eyes distinct, triangular; ocelli more or less prominent, 40-70, arranged in 8-9 series. Segments, 55-65. First segment with four rows of setigerous foveolæ, sides striate. Other segments moderately striate beneath, posterior division of each segment marked with fine striæ. Last segment produced into a short spine, not projecting beyond the anal valves; not smooth, densely pilose; anal valves not marginate, rough, densely pilose; anal scale, small, rounded, pilose. Repugnatorial pore moderate, partly hidden by the transverse suture, which is rather sharply emarginate. Pairs of feet 100-112, not extending much beyond the width of body, densely pilose. *Male*: Mandibular stipes strongly produced beneath. First pair of legs large, uncinatè, the inner surface with numerous tubercles, pilose. Ventral margin of the seventh segment not much produced. Genitalia exposed; anterior plate thick, rounded, the end somewhat clavate and scooped out, very pilose; posterior plate strongly twisted and rolled, the apex divided into three plates, the anterior lanceolate, not serrated, the others broad and thin, with the edges strongly toothed. Flagellum not detected. Length of body, 20-38^{mm}; width, 1.5-2^{mm}.

Habitat.—Pennsylvania, Virginia, and Indiana.

I have examined numerous specimens of this species from Bloomington, Indiana. *Julus montanus* Cope is identical with this species.

Specimens not adult range as follows:

Length.	Width.	Segments.	Pairs of feet.	Ocelli.
<i>mm.</i>	<i>mm.</i>			
24	1.6	60	100	40-7
19	1	47	93	35-7
12	.8	49	83	27-6

15. *Parajulus canadensis* (Newport).

Julus canadensis Newport, Ann. & Mag. Nat. Hist., 267, 1844.

Dark brown, almost black, sides with a series of yellow, conglomerated spots; feet very pale, antennæ scarcely paler. Rather slender, not smooth, shining, nor pilose. Vertex rough, a slight median sulcus, setigerous foveolæ present. Antennæ short, about equaling width of body. Eyes distinct, triangular; ocelli rather flat, 43-50, arranged in 6-8 series. Segments, 56-57. First segment with sides striate. Other segments moderately striate, numerous tailed-like punctations above. Last segment produced into a large, strong, round, decurved spine, sparsely pilose; anal valves scarcely marginate, pilose; anal scale triangular, pilose. Repugnatorial pore large, not touching the transverse suture, which is broadly but not deeply emarginate. Pairs of feet, 86-93, stout, not equaling the width of body, sparsely pilose. Length of body, 18-25^{mm}; width, 1.3-1.5^{mm}.

Habitat.—Canada and Northeastern United States.

I have examined two females of this species from Ludington, Michigan, collected by Mr. N. B. Pierce.

Subgenus *Pseudojulus*, subgen. nov.

16. *Parajulus obtectus*, sp. nov.

Julus impressus McNeill, Proc. U. S. Nat. Mus., 1886.

Color as in *J. impressus*, but more bright and not so dark. Robust, attenuated before, not smooth, nor pilose. Vertex with a short median sulcus, setigerous foveolæ present. Antennæ long, somewhat exceeding the width of body. Eyes distinct, triangular or trapezoidal in the larger specimens; ocelli numerous, 40-55, arranged in 7-9 series. Segments, 50-55. Sides of first segment striate. Other segments deeply striate, upper surface as in *impressus*, but the striations not so deep. Last segment produced into a rather large, stout spine, which projects beyond the anal valves; anal valves smooth, scarcely marginate; anal scale moderate, obtusely triangular. Repugnatorial pore large, not touching the transverse suture, which is deeply emarginate. Pairs of feet, 80-95, extending beyond sides of body, moderately slender, sparsely pilose. *Male*: Mandibular stripes not much produced beneath. First pair of legs small, cone-like, not uncinat, sparsely pilose. Coxæ of the second pair of feet not produced into peculiar appendages. Margin of the seventh ventral segment not much produced. Genitalia concealed. Length of body, 18-35^{mm}; width, 1.8-2.5^{mm}.

Habitat.—Bloomington, Indiana, and Pensacola, Florida.

I have examined numerous females of this species, but only a few males, and I have deemed it best not to give a description of the genitalia.

This species is the type of the subgenus *Pseudojulus*.

17. *Parajulus varius*, sp. nov.

Light chestnut, a median and a lateral row of spots; segments dark above, with yellow lines; a dark band between the eyes, also two large pale spots, with two smaller ones behind them; vertex or occiput with long, irregular pale spots; feet pale. Slender, not smooth or pilose. Vertex finely wrinkled, a median sulcus, setigerous foveolæ absent. Antennæ moderate, exceeding the width of body. Eyes distinct, triangular; ocelli numerous, 40-75, arranged in 7-9 series. Segments, 50-55. Sides of first segment striate. Other segments not deeply striate beneath, finely wrinkled and striate above. Last segment produced into a moderate, robust spine, barely passing the anal valves; anal valves not marginate; anal scale triangular, large, sparsely pilose. Repugnatorial pore moderate, not touching the transverse suture, which is straight or nearly so. Pairs of feet, 75-90, scarcely extending beyond the sides of body, sparsely pilose. *Male*: Mandibular stripes not much produced beneath; first pair of feet slightly bent inwards; genitalia concealed. Length of body, 25-30^{mm}; width, 1.5-2^{mm}.

Habitat.—San Diego, Cal. (Miss Rosa Smith); Ukiah, Cal. (Mr. James K. Burke); Rosario Mission, S. Cal. (Mr. Charles R. Orcutt).

I have examined two specimens from San Diego, three from Ukiah, and numerous specimens, mostly broken, from Rosario Mission. Those from the latter are almost black in coloration and lack the median and lateral rows of spots, but otherwise there is no difference.

Genus IV.—NANNOLENE, gen. nov.

Eyes triangular; ocelli arranged in several series. Antennæ short, subclavate, joints longer than wide, second and sixth subequal, the latter enlarged as in *Cambala*. Mandibulary combs six (5). Gnathochilarium barely spatulate; stipes separated, attenuated towards the base; mentum entire, exposed; promentum almost as in *Julomorpha*, posterior plate trapezoidal, anterior lanceolate-triangular; lingual plates separated; lingual lobes denticulated. Segments constricted in the middle; the anterior ten segments striate from the feet to the repugnatorial pore, the striæ diminishing on the other segments; at the junction of the anterior and posterior parts are round impressions, larger than the pore, extending around all, except the first 6 or 8; first segment nearly as wide as the next two. Repugnatorial pore beginning on the sixth segment, placed in the posterior part. Fourth segment apodous. Feet long and slender, seventh joint longer than the third. *Male*: First pair of legs about half as long as other, scarcely thickened, same number of joints, unarmed; sixth and seventh pairs of legs with the penultimate joint swollen and produced on the inner side.

This genus seems to be more related to *Cambala* than any other genus, but nevertheless it also approaches *Julomorpha*, especially in the construction of the gnathochilarium. It is distinguished from all the known genera by the first pair of feet of the male.

The following species is the type of the genus:

18. *Nannolene burkei*, sp. nov.

Light brown, a lateral row of large spots almost encircling the segments, feet and antennæ pale, a brown band between eyes. Slender, not smooth or pilose. Vertex smooth, a faint median sulcus, setigerous foveolæ absent. Antennæ equaling width of body, pilose. Eyes distinct, triangular; ocelli 26, arranged in 5 series, not quite all filled out. Segments 50 or 51. Sides of the first segment with four striæ. Other segments moderately striate beneath, posterior part of the segments with fine striæ. Last segment rounded; anal valves not marginate, pilose; anal scale obtusely rounded, pilose. Repugnatorial pore small, placed on the anterior third of the posterior part of the segment. Pairs of feet, about 87, slender, extending beyond the sides of body. *Male*: Mandibulary stipes slightly produced in the middle; ventral margin of the seventh segment not produced; genitalia concealed. Length of body, 25^{mm}; width, 1^{mm}.

Habitat.—Ukiah, Cal.

I have examined two young males and two adult females of this species. They were collected by Mr. James K. Burke, after whom the species is named. On account of the females being curled in a spiral shape, the number of segments and pairs of legs were counted with uncertainty.

The two young males differ as follows:

Length.	Width.	Segments.	Pairs of feet.	Ocelli.
<i>mm.</i>	<i>mm.</i>			
14	.08	44	71	20-4
13	.07	43	68	17-3

Genus V.—CAMBALA Gray.

Cambala Gray, Griffith, Animal King., II, pl. 135, 1832 (*annulata*).

Ocelli arranged in a single series behind the antennæ and parallel with the first segment. Antennæ short, subclavate, the joints longer than wide, the second longest, the sixth stout and nearly as long. Mandibular combs 6-7. Gnathochilarium somewhat spatulate; stipes attenuated at the base, separated by the promentum; mentum entire, rectangular, nearly concealed by the hypostoma; promentum very large, divided as in *Julomorpha*, posterior division converging more anteriorly, anterior division elongate-triangular; lingual plates separated; lingual lobes denticulated. Segments with sharp, elevated ridges, first and last smooth. Repugnatorial pore very small, placed on an enlarged ridge. Fourth segment footless. Feet moderately elongate, the seventh and third joints subequal. *Male*: First pair of legs six-jointed, the third as long as the fourth and fifth together, the last short, very blunt, unarmed; genitalia about half covered.

From any of our North American genera this may be separated by the dorsal carinæ, the ocelli, and the first pair of legs of the male.

The only species belonging to this genus besides the one here described, is *Cambala nodulosa* Butler, from the Island of Rodriguez.

19. *Cambala annulata* (Say).

Julus annulatus Say, Journ. Acad. Nat. Sci. Phila., 103, 1821.

Cambala annulata Cope, Proc. Amer. Philos. Soc., 181, 1869.

Light yellowish brown, a lateral row of dark brown spots, carinæ brown, a dark line between eyes, feet and antennæ pale. Slender, cylindrical, not tapering, carinated, not pilose. Vertex without a median sulcus and setigerous foveolæ. Antennæ short, subclavate, about equal to width of body, densely pilose. Eyes distinct; ocelli 4-6, arranged in one line. Segments, 50-65. First segment large, sides marginate, posterior border with an indistinct row of carinæ. Other

segments deeply sulcate, carinæ acute, anterior part of the segments with fine elevated lines. Last segment rounded, smooth, not pilose; anal valve scarcely marginate, smooth, pilose; anal scale moderate, rounded, pilose. Pairs of feet, 70–112, rather stout, equaling the width of body, sparsely pilose. *Male*: First pair of feet short, last joint blunt, unarmed, a little curved; second pair somewhat longer, armed. Genitalia nearly covered; anterior plate with the edge turned backward, the inner especially, around which curves the flagellum, end of plate divided into two lobes, pilose; posterior plate contorted, divided into two short, thickened lobes, the anterior short and bent at a right angle to the plate, posterior moderately long, a little falciform, pilose. Flagellum, very long, curving around to the front of the anterior plate. Length of body, 26–38^{mm}; width, 1.5–2^{mm}.

Habitat.—Indiana, Virginia, Kentucky, Tennessee, and North Carolina.

Specimens not adult vary as follows:

Length.	Width.	Segments.	Pairs of feet.
<i>mm.</i>	<i>mm.</i>	45	77
17.5	1.2	43	67
13.5	1	34	50
16	1		

The following is a catalogue of the species of this family described from North America. I have used the following letters for the different zoögeographical regions:

B.= Boreal or Canadian.

E.= Eastern Province.

En.= Eastern Province, northern part.

Es.= Eastern Province, southern part.

W.= West Indian, etc.

C.= Central Province.

P.= Pacific Province.

C. A.= Central American.

Family A.—JULIDÆ Leach.

Genus I.—JULUS Linnæus.

1. *Julus canaliculatus* Wood. En.
2. *Julus cinerefrons* Wood. P.
3. *Julus caruleocinctus* Wood. †
4. *Julus erignus* Brandt. En.
5. *Julus filicornis* Saussure. C. A.
6. *Julus hortensis* Wood. En.
7. *Julus laqueatus* Wood. En.
8. *Julus milesi* Wood. En.
9. *Julus minutus* Brandt. E.
10. *Julus oicenii* Bollman. En.
11. *Julus stigmatosis* Brandt. E.
12. *Julus virgatus* Wood. En.

Genus II.—STEMMIULUS Gervais.

13. *Stemmiulus compressus* Karsch. N.

Genus III.—SPIROSTREPTUS Brandt.

14. *Spirostreptus abstemius* Karsch. W. ?
 15. *Spirostreptus ampussis* Karsch. C. A.
 16. *Spirostreptus claripes* Koch. En.
 17. *Spirostreptus confragosus* Karsch. W.
 18. *Spirostreptus flavicornis* Karsch. W.
 19. *Spirostreptus fraternus* (Sauss.). C. A.
 20. *Spirostreptus montezumæ* (Sauss.). C. A.
 21. *Spirostreptus multiannulatus* (McNeill). En.
 22. *Spirostreptus nutans* Koch. En.
 23. *Spirostreptus otomitus* (Sauss.). C. A.
 24. *Spirostreptus sculpturatus* Karsch. W. ?
 25. *Spirostreptus surinamensis* Brandt. W.
 26. *Spirostreptus ventralis* Porath. W.

Genus IV.—SPIROBOLUS Brandt.

27. *Spirobolus acutus* (Humb. and Sauss.). W.
 28. *Spirobolus*? *agilis* Cope. Es.
 29. *Spirobolus angusticeps* Wood. P.
 30. *Spirobolus angusticollis* Karsch. C. A.
 31. *Spirobolus arboreus* (Saussure). W.
 31b. *Spirobolus arboreus gundlachi* Karsch. W.
 31c. *Spirobolus arboreus krugii* Karsch. W.
 32. *Spirobolus atratus* (Girard). Es.
 33. *Spirobolus aztecus* (Saussure). C. A.
 34. *Spirobolus beauvoisi* (Gervais). W.
 35. *Spirobolus brevicollis* Voges. C. A.
 36. *Spirobolus californicus* (Humb. and Sauss.). P.
 37. *Spirobolus caudatus* Newport. N.
 38. *Spirobolus chickamecus* (Saussure). C. A.
 39. *Spirobolus crassicornis* (Humb. and Sauss.). W.
 40. *Spirobolus domingensis* (Humb. and Sauss.). W.
 41. *Spirobolus duvernayi* Karsch. W.
 42. *Spirobolus excisus* Karsch. W.
 43. *Spirobolus facatus* Karsch. W.
 44. *Spirobolus flavocinctus* Karsch. W.
 45. *Spirobolus fundipedeus* Karsch. W.
 46. *Spirobolus gracilipes* Karsch. W.
 47. *Spirobolus haitensis* (Gervais). W.
 48. *Spirobolus hebes* Bollman. P.
 49. *Spirobolus heteropygus* (Humb. and Sauss.). C. A.
 50. *Spirobolus ignobilis* (Humb. and Sauss.). En.
 51. *Spirobolus marginatus* (Say). E.
 52. *Spirobolus mexicanus* (Saussure). C. A.
 53. *Spirobolus miniatipus* Karsch. W.
 54. *Spirobolus multifrons* Karsch. W.
 55. *Spirobolus mysticus* (Saussure). C. A.
 56. *Spirobolus nahuus* (Humb. and Sauss.). C. A.
 57. *Spirobolus nietanus* (Saussure). C. A.
 58. *Spirobolus olivaceus* Newport. C. A.

59. *Spiroboldus ornatus* (Girard). Es.
60. *Spiroboldus parvus* Karsch. W.
61. *Spiroboldus pensacolæ* Bollman. Es.
62. *Spiroboldus spinigerus* Wood. Es.
63. *Spiroboldus striolatus* (Gervais). C. A.
64. *Spiroboldus tepanecus* (Saussure). C. A.
65. *Spiroboldus toltecus* (Saussure). C. A.
66. *Spiroboldus totonacus* (Saussure). C. A.
67. *Spiroboldus tzendalus* (Saussure). C. A.
68. *Spiroboldus uncigerus* Wood. P.
69. *Spiroboldus vulranus* Karsch. C. A.
70. *Spiroboldus woodi* (Humb. and Sauss.). En.
71. *Spiroboldus zapotenus* (Saussure). C. A.

Genus V.—PÆROMOPUS Karsch.

72. *Peromopus lysipetalinus* (Karsch). P.

Genus VI.—PARAJULUS Humb. and Sauss.

73. *Parajulus cæsar* (Karsch). W.
74. *Parajulus cæsius* (Wood). Es.
75. *Parajulus canadensis* (Newport). En.
76. *Parajulus castaneus* Bollman. En.
77. *Parajulus curiosus* (Karsch). W.
78. *Parajulus diversifrons* (Wood). En.
79. *Parajulus ellipticus* Bollman. En.
80. *Parajulus furcifer* (Harger). P.
81. *Parajulus immaculatus* (Wood). En.
82. *Parajulus impressus* (Say). En.
83. *Parajulus oblectus* Bollman. E.
84. *Parajulus olmecus* Humb. and Sauss. C. A.
85. *Parajulus oregonensis* (Wood). P.
86. *Parajulus pennsylvanicus* (Brandt). En.
87. *Parajulus pilosiscutus* (Wood). En.
88. *Parajulus rasilis* (Karsch). N.
89. *Parajulus tarascus* (Humb. and Sauss.). C. A. S.
90. *Parajulus varius* Bollman. P.

Genus VII.—NANNOLENE Bollman.

91. *Nannolene burkei* Bollman. P.

Genus VIII.—CAMBALA Gray.

92. *Cambala annulata* (Say). E.

INDIANA UNIVERSITY,

Entomological Laboratory, February 1, 1887.

[From *Entomologica Americana*, 1, 1887, pp. 225-228.]

DESCRIPTION OF NEW GENERA AND SPECIES OF NORTH AMERICAN MYRIOPODA (JULIDÆ.)

BY C. H. BOLLMAN.

In examining the material of this family in the museum of the Indiana University and my own collection, I have found that the following species do not appear to be described:

Family A.—JULIDÆ, Leach.

Genus I.—NANNOLENE, gen. nov.

Antennæ short, subclavate, joints longer than wide, second and sixth subequal, the latter enlarged as in *Cambala*. Mandibular combs 6 (5). Gnathochilarium somewhat spatulate, stipes separated attenuated at the base, mentum entire, exposed, promentum divided almost as in *Cambala* or *Iulomorpha*; lingual lobes denticulated. Segments constricted in the middle, the anterior ten segments striate from the feet to the pore, striæ diminishing on the others; at the junction of the anterior and posterior parts of almost every segment are round impressions, larger than the repugnatorial pore, which extend around all the segments except the anterior 6-8. Repugnatorial pore commencing on the sixth segment, placed in the posterior part. Fourth segment footless. Feet long and slender. Male: First pair of legs short, usual number of joints, somewhat thickened, unarmed; penultimate joint of the sixth and seventh pairs of legs produced on the inner side.

This genus is related more to *Cambala*, than any other, although it approaches *Iulomorpha* in the form of the promentum. The following species is the type:

Nannolene burkei, sp. nov.

Light brown, a lateral row of large brown spots, a brown band between eyes. Slender, not smooth or pilose. Vertex smooth, a faint median sulcus, setigerous foveolæ absent. Antennæ equaling the width of body, pilose. Eyes distinct, triangular; ocelli 2 to 5. Segments 50 or 51. Sides of first segment striate, others moderately striate beneath, posterior margin of each segment with fine parallel striæ. Last segment rounded; anal valves not marginate, pilose; anal scale obtusely rounded, pilose. Repugnatorial pore small, not touching the transverse suture. Pairs of feet about 87, extending beyond the sides of

body. Male: Mandibular stipes a little produced in the middle; genitalia concealed. Length of body 18^{mm}, width —^{mm}.

Habitat.—Utah; California.

I have examined two adults and two young of this species collected by Mr. James K. Burke, after whom the species is named.

Genus II.—*PARAJULUS*, Humbt. and Sauss.

To this genus belong our larger species of so-called *Julus*. From the latter genus it is easily separated by the number of mandibular combs (10), the dwarfed second pair of feet and the form of the first segment of the male with its appendages.

Under the genus *Julus*, Wood says, "In all species in which I have had the opportunity of examining sexes, the form of the first scutum distinguishes them with certainty. In the male its antero-posterior diameter is large, and there are well marked lateral margins running nearly at right angles to the others. In the female the anterior posterior diameter is much less, but laterally the scutum is so produced that the anterior and posterior margins may in most cases be said to meet one another at an angle. The males are further distinguished by a peculiar alteration of the first pair of feet, which are transformed into a pair of very large, thick organs."

By applying this remark to those species of which he had both sexes, we have most of the species known to be in this genus at present. The following is a key to the subgenera:

- a. First segment enlarged in the male. First pair of feet of male large, crassate, numerous short tubercles on the inner side *PARAJULUS*
- aa. First segment alike in both sexes. First pair of feet of male short, thick, tubercles absent. *PSEUDOJULUS*

Sub-genus *Parajulus*.

2. *Parajulus castaneus*, sp. nov.

Color nearly the same as in *P. impressus* (Say). Moderately slender, rough, not pilose. Vertex finely wrinkled, a faint median sulcus, setigerous foveolæ present. Antennæ equaling the width of body. Eyes distinct, triangular, ocelli 54-8. Segments, 42-51. Sides of first segment striated, others deeply striate beneath, above with numerous short lines, which are branched. Last segment produced into a moderate spine, projecting beyond the anal valves, not pilose; anal valves not marginate, pilose; anal scale obtusely rounded, small. Repugnatorial pore moderate, touching the transverse suture, which is sharply sinuate. Pairs of feet 66, equaling the width of body. Male: Mandibular stipes strongly produced; coxæ of the second pair of feet as in *impressus*; genitalia about half concealed, composed of three plates; anterior plate round, clavate, pilose; middle plate curving up in front of anterior, and expanding between them into an elongate plate, which has three

lobes or spines on the inner side, the first large, the second small and right behind it, the last small, placed near the end; posterior plate curving upwards and inward till they meet and then outwards, end not bifid. Flagellum not detected. Length of body 23^{mm}; width, 2^{mm}.

Habitat.—Fort Snelling, Minnesota.

I have a male and female collected by Mr. George Howe. On account of the bad condition of the female, the ocelli and pairs of feet could not be counted.

Sub-genus *Pseudojulus*, subgen. nov.

3. *Parajulus obtectus*, sp. nov.

Color as in *impressus*, but more bright. Robust, attenuated anteriorly, not smooth or pilose. Vertex with a median sulcus, setigerous foveolæ present. Antennæ exceeding the width of body. Eyes distinct, triangular; ocelli 40–55, arranged in 7–9 series. Segments 50–55. Sides of first segment striate; other segments deeply striate, upper surface almost as in *impressus*. Last segment produced into a rather large and robust spine, projecting beyond the anal valves; anal valves smooth, barely marginate; anal scale moderate, obtusely triangular. Repugnatorial pore large, not touching the transverse suture, which is deeply marginate. Pairs of feet 80–95, extending beyond the sides of body. Male: Mandibular stipes not produced much beneath; coxæ of the second pair not drawn out; genitalia concealed. Length of body, 18–30^{mm}; width, 1.8–2.2^{mm}.

Habitat.—Bloomington (Indiana) and Florida.

I have examined a large number of females, but only a few males, and I have not attempted to give a description of the genitalia.

4. *Parajulus varius*, sp. nov.

Color as in *impressus*, but of a different shade. Slender, not smooth or pilose. Vertex finely wrinkled, a median sulcus, setigerous foveolæ absent. Antennæ exceeding the width of body. Eyes distinct, triangular; ocelli 40–75, arranged in 7–9 series. Segments 50–55. Sides of first striate; others not deeply striate beneath; finely wrinkled and striate above. Last segment produced into a moderate spine, barely passing the anal valves, anal valves not marginate; anal scale large, triangular, sparsely pilose. Repugnatorial pore moderate, not touching the transverse suture, which is nearly straight. Pairs of feet 75–90, scarcely extending beyond the sides of body. Male: Mandibular stipes not much produced beneath; genitalia concealed. Length of body, 18–24^{mm}; width, 1.5–1.8^{mm}.

Habitat.—San Diego, California (Miss Rosa Smith); Ukiah, California (Mr. James K. Burke); Rossario Mission, Lower California (Mr. Charles Orcutt.)

I have examined two specimens from San Diego, three from Ukiah, and numerous specimens mostly broken from the latter locality. Those

from the last place are very dark in color, but otherwise they do not differ.

Genus *SPIROBOLUS*, Brandt.

Subgenus *Rhinocrinus*, Karsch.

5. *Spirobolus pensacolæ*, sp. nov.

Above dark green, segments margined with reddish brown, face, anterior and posterior segments bright green, feet lighter than in *marginatus*. Moderately robust, attenuated before, about twelve anterior segments crassate beneath, not smooth. Vertex smooth, sparsely punctate, median sulcus interrupted; elytral foveolæ 8. Antennæ short. Eyes trapezoidal; ocelli 45-7. Segments 49. First segment sulcate, anterior border sinuate; second segment with the lobe not so broad and more nearly triangular than in *marginatus*. Other segments rough, punctation most numerous on the posterior half; striæ decurved; strong on the posterior half. Last segment pointed, densely punctate; anal valves marginate; anal scale rounded. Repugnatorial pore large. Pairs of feet 92, extending beyond sides of body. Length of body, 86^{mm}; width, 9^{mm}.

Habitat.—Pensacola, Florida.

This species is described from one female, collected by the author in the spring of 1886. It is in all related to *marginatus* rather than any other of our species.

Spirobolus hebes, sp. nov.

Ochraceous brown, a lateral row of spots, feet light. Robust, not attenuate, somewhat crassate, not smooth. Vertex smooth, sparsely punctate, median sulcus interrupted; clypeal foveolæ 8. Antennæ short. Eyes subtriangular; ocelli 29-38, arranged in 6 series. Segments 39-41. First segment acute, more so in the male than in the female; second segment strongly produced beneath; almost subquadrate, rounded. Other segments sparsely punctate, numerous short lines above, striæ decurved. Repugnatorial pore small. Pairs of feet 76-79, short. Male: Coxæ of the 3-6 pairs of feet most produced; ventral plate smooth, triangular. Genitalia inner part of anterior plate rough, twice as high as ventral plate, external part with the end rounded and not produced; posterior plate thick, a little bent, the end small and rounded, beneath are two serrated lobes and below these a hard and a blunt lobe. Length of body, 45-48^{mm}; width, 7-8^{mm}.

Habitat.—San Diego, California.

I have examined a male and female of this species collected by Miss Rosa Smith.

JULUS Linnaeus.

Julus owenii, sp. nov.

Pale brown, a lateral row of spots, a pale oval spot at the base of antennæ. Slender, not smooth, not pilose. Vertex rough, a faint median

sulcus; setigerous foveolæ absent. Antennæ subclavate, equaling the width of body. Eyes indistinct, subrotund; ocelli not all filled out, about 28-6 or 7. Segments 38-40. First segment thin, striate. Other segments striate above and beneath. Last segment rounded; anal valves not marginate; anal scale triangular. Repugnatorial pore large, touching transverse suture, which is excised. Pairs of feet 54-66, equal to the width of body. Male: Mandibular stipes not much produced; first pair of legs small, uncinat; genitalia concealed. Length of body, 9.2-16.6^{mm}; width, 0.6-.07^{mm}.

Habitat.—New Harmony, Indiana.

This species is described from two males collected by Dr. Richard Owen. It is related to *Julus hortensis* Wood.

[From *Entomologica Americana*, II, 1887, pp. 45-46.]

NEW GENUS AND SPECIES OF POLYDESMIDÆ.

BY CHARLES H. BOLLMAN.

In examining the material of this family in the museum of the Indiana University and my own collection, I have found the following new species. The types are deposited in the museum of the Indiana University.

Genus I.—POLYDESMUS Latreille.

1. *Polydesmus nitidus* sp. nov.

Dark shining brown, beneath lighter, lateral plates reddish-brown; antennæ dark. Moderately slender and depressed, acuminate anteriorly and posteriorly, but not so much as in *canadensis*. Antennæ exceeding the length of body, subclavate. First dorsal plate wide, angles a little produced, sides one-toothed; posterior border with a row of fine, ciliated spines; anterior row of scales barely distinguishable, middle row of four large scales, posterior of three, small ones in the middle and two larger ones at both ends, anterior side scale small, other one (repugnatorial pore scale) large elongate. Other dorsal plates with the scales distinct, anterior angles rounded, posterior produced, lateral margins 3-4 toothed, posterior border of anterior segments ciliated; anterior border divided by the median dorsal line into two large scales; middle row consists of four scales, posterior of six, outer larger, anterior side scale large and swollen, repugnatorial pore scale large and elongate; scales of last segments more elongate, marked with fine irregular lines, the last row projecting behind. Feet long, strongly crassate in the male and the femur swollen above, in the female somewhat crassate. ♂ copulation foot large, slender and curved; apex beneath with several bunches of flat, spiny hairs, below this are four tubercles, the two lowest ones on the inner side largest, elongate, the last one pointing toward the coxæ, piligerous pulvillus large, above which is a moderately long tapering branch and below a tubercle. Length of body 15-18^{mm}; width, 2.8-3.5^{mm}.

Habitat.—Pensacola, Fla.

I have examined 15 specimens of this species, collected by myself in the vicinity of swamps. This species is related to *canadensis*, but is easily distinguished by the long slender tubercles of the male genitalia.

Genus II.—CHÆTASPIS, gen. nov.

Body slender, not much depressed, more convex than in *Polydesmus*, but not so much as in *Scytonotus*.

Antennæ with the third and sixth joints equal, the latter strongly swollen, second and fifth subequal, fourth equal to seventh and eighth. Segments 20; lateral plates distinct, but not as in *Polydesmus*, slightly angled, serrate; dorsal plates smooth, excepting a row of indistinct, setigerous tubercles along the anterior and posterior margins, no median, dorsal line; last acuminate. Repugnatorial pore rather large, placed on a moderately large and round tubercle, near the outer border of the 5, 7, 9, 10, 12, 13, 15, 16, 17, 18, 19 dorsal plates. Pairs of feet, ♂ 30, ♀ 31.

This genus is related to *Polydesmus* and *Scytonotus*, but can be easily separated by the character of the dorsal plates.

2. *Chætaspis albus*, sp. nov.

White throughout. Slender, small, slightly acuminate before. Antennæ exceeding the width of body, subclavate. First dorsal plate large, semicircular, angles not produced, provided with five rows of hairs. Other dorsal plates with the posterior angles a little produced, lateral margins with 3–4 setigerous teeth; rows of hairs 2 to 3. Feet rather long, ♂ crassate, ♀ slightly crassate. ♂ copulation foot erect, not as in *Polydesmus*; composed of two pieces, the outer curving outwards and then inwards so that the ends almost touch over the median line of body, rather robust, somewhat flattened, the end apparently divided into three pieces—a small lobe, followed by a long and slender one with the end turned sharply downward, and this by a large flat bifid piece; inner piece narrow and thin, sickle shaped, the end curving up between the branched lobe of the outer piece; coxæ with a few long hairs. Seventh dorsal plate enlarged. Length of body 6–7.5^{mm}; width, 0.3–0.5^{mm}.

Habitat.—Bloomington, Ind.

I have examined four ♀ ♀ and three ♂ ♂. It seems to be more underground in its habits than the other species of this family known to me. I have always found it under logs buried rather deep in the ground. I thought at first this might be the young of some other *Polydesmida*, but having found several males and taken a pair in the act of copulation, I have decided that it must belong to a new genus.

Genus III.—SCYTONOTUS Koch.

3. *Scytonotus cavernarum*, sp. nov.

Allied to *nodulosus* Koch. Pure white throughout. Slender, somewhat depressed, acuminate anteriorly. Antennæ exceeding the width of the body, clavate. First dorsal plate elliptical, angles sharp; scales arranged in five, transverse series, anterior row sharp, setigerous, all

covered with fine granulations. Other dorsal plates with all the lateral sides sharply and deeply four or five toothed, scales arranged in four rows, the posterior row more or less setigerous, on the posterior segments the anterior row is not very distinct. Repugnatorial pore scale large and swollen. Legs moderately long and slender. Length of body 11^{mm}; width, 1.5^{mm}.

Habitat.—Mayfield's Cave, Bloomington, Ind.

This species is described from one female found crawling on the floor of the above cave, in October, 1886. As already stated, this species is more nearly related to *nodulosus*, but as *granulatus* is the only species found so far in the vicinity of Bloomington, I suppose it is descended from *granulatus*.

[From *Entomologica Americana*, III, 1887, pp. 81-83].

NEW NORTH AMERICAN MYRIAPODS.

BY CHARLES H. BOLLMAN.

The types of the following new species are deposited in the Museum of the University of Indiana.

Subgenus *Parajulus*.

1. *Parajulus rugosus*, sp. nov.

Brown, segments banded with dark gray posteriorly, black dorsal line and lateral row of spots distinct, vertex black, feet banded with brown. Moderately slender, rough, not pilose. Vertex wrinkled, median sulcus plain, setigerous foveolæ present. Eyes distinct, triangular, almost trapezoidal; ocelli 50-55, arranged in 8 or 9 rows. Segments 51-54. Sides of first segment only marginate, other segments moderately striate beneath, with punctations and short lines above. Last segment produced into a sharp, robust spine, projecting beyond the anal valves, which are scarcely marginate, anal scale large, obtuse, very sparsely pilose. Repugnatorial pore large, not touching the transverse suture, which is bent. Pairs of feet 96-104, exceeding the width of body. Male: Mandibular stipes strongly produced beneath at the anterior angle. Coxæ of the second pair of feet produced as in *impresus*. Genitalia: anterior part of first plates shorter than posterior part, round, slightly bent outwards, pilose; posterior part flat, angularly spatulate, presenting the broad side outwards; anterior division of posterior plate curving up around in front of anterior, end bifid, slightly margined beneath; posterior part lanceolate, slender, about as long as anterior division. Length of body, ♂ 35^{mm}, width, 2.2^{mm}; ♀ 40^{mm}, width, 3^{mm}.

HABITAT.—Monongahela City, Washington County, Pennsylvania.

In the plan of the male genitalia this species is related to *ellipticus*, but differs greatly from that species especially in the form of the posterior plate.

This species is described from two males and two females, collected by Mr. Albert Gregg.

2. *Strongylosoma poeyi*, sp. nov.

Dark green, lateral plates and feet pale. Robust, not smooth, shining. Antennæ subclavate, longer than the width of body. First segment rather large, convex, scarcely punctate. Other segment punctate,

transverse suture deep, not tuberculate. Lateral plates thick and obtuse, scarcely produced. Repugnatorial pore situated on the posterior third and slightly beneath, sunken. Male: Genitalia long and slender, somewhat expanded and excavated towards the end, which is bifid. Length of body 27^{mm}; width, 2.3^{mm}.

HABITAT.—Havana, Cuba.

This species is described from one male and one female, both in a rather bad condition. I have named this species after its collector—Dr. Felipe Poeys—who also sent me in the same collection *Orphnæus brasiliensis*, *Mecistocephalus guildingii*, *Scolopendra alternans*, and *Newportia longitarsis*.

3. *Geophilus salemensis*, sp. nov.

Frontal plate present, anal pores moderate. Light red, head, antennæ, last segment and feet orange. Robust, slightly attenuated anteriorly, more strongly posteriorly, moderately smooth, sparsely punctate and pilose. Prehensorial feet punctate and pilose; sternum wider than long (8:6), anterior margin not produced; coxæ scarcely longer than wide (3.5:3), unarmed; one small tooth. Cephalic plate longer than wide (7:5.5), suboval, sparsely punctate and pilose; prebasal plate exposed; basal plate about three times wider than long. Antennæ moderate, joints rather long, two preceding the last not noticeably shortened. Dorsal plates plainly bisulcate; anterior predorsal plates equal to posterior, median longest; ventral plates with a median foveolæ, sparsely punctate. Spiracles round, anterior large, median and posterior small. First pair of feet moderately short and slender, anterior and posterior subequal. Posterior coxæ moderately inflated, pilose, pores few and mostly concealed by the last ventral plate, which is wide, with the sides substraight and rapidly converging. Pairs of feet of male 51–54, last strongly crassate and densely pilose, armed; female 54–56, last slender, armed, and pilose. Length of body, 35–60^{mm}; width, 1–2^{mm}.

HABITAT.—Salem, Indiana.

I have examined five males and four females of this species. It is more related to *Geophilus rubens* Say.

4. *Geophilus setiger*, sp. nov.

Frontal plate absent; anal pore large, concealed. Orange, head and antennæ brown. Slender, moderately attenuated posteriorly; smooth, sparsely pilose. Prehensorial feet sparsely pilose, smooth, not punctate; sternum wider than long (4:3), anterior margin not produced; coxæ wider than long (2:1.5), unarmed; one single acute tooth. Cephalic plate suboval, longer than wide (4:3.5), smooth, sparsely pilose; basal plate much wider than long (4:1.3), partly covered by cephalic plate. Antennæ short, joints moderate, two preceding last subequal. Dorsal plates distinctly bisulcate; anterior predorsal plates short, median longer than posterior; ventral plates with three longitudinal depres-

sions. Spiracles round, anterior scarcely enlarged, rest nearly equal. First pair of feet short, anterior and posterior subequal, former more robust. Posterior coxæ moderately inflated, pilose, pores few (5-6), arranged along the ventral plate, which is wide with the side straight and strongly converging. Pairs of feet of male 43, last moderately thickened, pilose and armed; female 45, last rather slender, less pilose than male, armed. Length of body 18.5-21.5^{mm}; width, 0.7-1^{mm}.

Habitat.—Salem, Indiana.

I have examined a male and a female.

Subgenus *Archilithobius*.

Lithobius holzingeri, sp. nov.

Chestnut brown, head dark, antennæ and feet paler. Robust, smooth, sparsely pilose; head subrotund, somewhat wider than long. Antennæ moderately long, joints 20-28, long. Ocelli 15-20, arranged in 5 or 6 series. Prosternal teeth 4. Coxal pores 3, 4, 7, 3-5, 6, 1, 5, somewhat transverse, large. Spines of first pair of feet 2, 3, 2; penultimate 3, 3, 2; last 1, 3, 2, 0-1, 3, 3, 6. Posterior pair of feet moderate, in the male the fifth joint is produced on the inner side into a short blunt pilose lobe. Claw of the female genitalia short, wide, tripartite; spines short and stout, subequal. Length of male 16-21^{mm}; female 12-18^{mm}.

Habitat.—Winona, Minnesota.

This species is related to *trilobus*, but is distinguished from it by the greater number of antennal joints, coxal pores, and the larger size. It is described from three males and nine females; I have named it in honor of its collector, Mr. J. M. Holzinger.

[From *Entomologica Americana*, IV, 1888, pp. 1-8.]

A PRELIMINARY LIST OF THE MYRIAPODA OF ARKANSAS, WITH
DESCRIPTIONS OF NEW SPECIES.

BY CHARLES H. BOLLMAN.

[Published by permission of John C. Branner, State Geologist of Arkansas.]

1. *Platydesmus lecontei* (Wood).

One was found on the grounds of the Deaf Mute Asylum and others on the hills along the river, near Little Rock.

2. *Julus minutus* (Brandt).

I found a specimen in the swamp at south end of Main street, Little Rock. Mr. Hutcherson also found one near Argenta.

3. *Spirobolus marginatus* (Say).

Abundant throughout the State.

4. *Parajulus cæsius* Bollman.

Julus cæsius Wood, Proc. Phila. Acad. Nat. Sci., 43, 1867 (Texas).

This species is not uncommon throughout the State.

5. *Cambala annulata* (Say).

I have received numerous specimens of this species, collected around Little Rock by Mr. Hutcherson.

6. *Lysiopetalum lactarium* (Say).

Common throughout the State.

7. *Campodes flavicornis* Koch.

Campodes flavicornis Koch, Syst. der Myr., 126, 1847 (Pa.).

Campodes fuscicornis Koch, Syst. der Myr., 127, 1847 (Pa.).

Spirostrephon cæcioannulatus Wood, Trans. Ar. er. Philos. Soc., 194, 1865 (Allegheny Co., Pa.); Ryder, Proc. U. S. Nat. Mus., 526, 1880.

Pseudotrermia rudii Cope, Proc. Amer. Philos. Soc., 180, 1869 (Montgomery Co., Va.); Ryder, Proc. U. S. Nat. Mus., 527, 1880.

Cryptotrichus cæcioannulatus Packard, Proc. Amer. Philos. Soc., 190, 1883 (Culmana, Ala., or Ocean Springs, Miss.).

A single specimen was obtained at Little Rock. As this species has a number of synonyms, I have thought it best to give its synonymy.

8. *Craspedosoma flavidum*, sp. nov.

Yellowish brown, feet and antennæ lighter. Robust, segments not constricted, lateral carinæ small, and body strongly resembling that of *Campodes*. Antennæ longer than width of body. Ocelli 12–14, distinct, arranged in a triangular patch and in 5 or 6 series. Dorsal plates rather smooth, setigerous granules small, setæ rather large. Male feet crassate, those of female slender. Length of body 5.8^{mm}; width .7^{mm}.

Habitat.—Okolona.

This species strongly resembles a *Campodes*. In life the individuals are a dusky yellow. This description is based upon a male and female.

9. *Craspedosoma carinatum* Bollman.

Not common in the Fourche bottoms, south of Little Rock; also found on the grounds of the Deaf Mute Asylum.

10. *Leptodesmus hispidipes* (Wood).

Abundant everywhere.

Very common throughout the State. All specimens obtained were young, but the shells of many adults were found.

11. *Euryurus evides* Bollman.

Paradesmus erides Bollman, Ent. Amer., II, 229, 1887 (Winona, Minn.).

Common over the State. Specimens agree with those from Minnesota.

12. *Chaetaspis albus* Bollman.

Chaetaspis albus Bollman, Ent. Amer., III, 46, 1887 (Bloomington, Ind.).

One specimen obtained at Little Rock.

13. *Polydesmus minor*, sp. nov.

Dark shining brown, lighter beneath. Moderately slender, depressed, slightly acuminate anteriorly and posteriorly, smooth, very sparsely pilose (setigerous). Antennæ equal to width of body, subclavate. First dorsal plate wide, angles not or but slightly produced, not toothed, tubercles not distinct, except lateral. Other dorsal plates with posterior angles produced, especially posteriorly; lateral margins 3 or 4 toothed, indistinct posteriorly, tubercles distinct, arranged in two rows of four each, anterior border indistinctly divided into two, posteriorly, the last row of tubercles project beyond border of segments. Legs long, crassate in male. *Male*: Copulation foot very similar to *serratus*; ventral plates produced into a short, pilose lobe anteriorly. Length of body 10–14^{mm}, width 1.5–1.8^{mm}.

Habitat.—Little Rock.

This species is described from a number of specimens found in the low lands south of Little Rock.

14. *Polydesmus pinetorum*, sp. nov.

Very similar to *P. serratus*, but the general color paler and size smaller. Tuberculation not so distinct, sides of first segment 1 toothed, other

distinctly 3 or 4 toothed. Last row of scales on posterior segments composed of 6 or 8 setæ tipped scales, which project beyond border of segments. Ventral plate of ninth pair of legs not produced as in *serratus*, copulation foot very similar. Length of body, 15 to 18.5^{mm}; width 2.2 to 2.8^{mm}.

Habitat.—Little Rock, Arkadelphia, Okolona, Murfreesboro, and Ultima Thule.

As already indicated, this species is closely related to *serratus*. It is principally separated by its smaller size and form of the ventral plate of ninth pair of legs of male.

This species may only represent a geographical form of *serratus*. It is very abundant throughout the State, and all those collected during the summer were in the larva stages. I am indebted to Mr. Hutcherson for adult specimens.

15. *Fontaria virginiana* (Drury).

Abundant at Donaldson, common at Okolona.

Specimens from Arkansas are similar to those from North Carolina, but those from northern parts of Mississippi valley represent geographical species.

At Donaldson the adults were found crawling on the surface of the ground in company with a large number of their young, probably one adult to 500 or 800 young, then (July 11, 1887) about half grown.

This species seems to be more confined to river bottoms and low rich woodlands.

The odor of prussic acid is strongly emitted by this species through a series of pores on each side of the body.

16. *Sphæriodesmus pudicus*, sp. nov.

General color pinkish, especially posteriorly, anterior half of segments darkest, a black median dorsal line, antennæ dark, legs pale. Body widest and highest anteriorly, tapering posteriorly, smooth, setæ absent. Vertex smooth, somewhat sulcate. Antennæ subclavate, about equaling width of body. Dorsal plates smooth, four preceding the last with an indistinct row of obtuse scales; lateral plates, except the first, antepenult and penult with their posterior margin serrate. Anal plate triangular with the angles rounded, sparsely pilose. Legs long and slender, extending beyond sides of body. Male: Ventral plate of second pair of legs produced into two short cones; coxæ of second and third pairs more pilose than others; copulation foot much twisted, end expanded and divided, pilose. Length of body 7^{mm}; width 2^{mm}.

Habitat.—Little Rock and Okolona.

This is the first time that any species of this genus has been found in the United States. It is easily distinguished from *S. mexicanus* (Saussure), by having a few scales on posterior dorsal plates.

The collection contains two specimens of this species.

17. *Polyxenus fasciculatus* Say.

Common at Little Rock, five were obtained at Antoine and one at Ultima Thule.

18. *Pauropus lubbockii* Packard.

A few specimens were obtained at Little Rock.

19. *Linotaenia bothriopa* (Wood).

I have received one specimen that was collected near Little Rock by Mr. Hutcherson.

20. *Linotaenia robusta* (Meinert).

Scolioplanes robustus Meinert, Proc. Amer. Phil. Soc., 224, 1886 († N. A.)

Frontal plate present. Fulvous, head and antennæ dark. Not robust, attenuated anteriorly and posteriorly; moderately smooth, sparsely pilose. Prehensorial feet smooth, sparsely pilose; sternum sub-cordiform, length and width subequal; coxæ a little wider than long, unarmed; tooth strong, acute; claw small, a little curved. Cephalic plate somewhat wider than long, smooth, sparsely pilose, sides strongly rounded, slightly diverging, posterior margin only covering a small part of basal plate, basal plate two-thirds as long as cephalic, twice as wide as long. Antennæ moderately short, articles short, penult and antepenult not noticeably shortened. Dorsal plate subsmooth, anterior prescuta short, median and posterior long. Spiracles round, very small. Ventral plates with an obsolete median foveola, pores on posterior margin. First pair of legs short, posterior longer than anterior. Posterior coxæ moderately inflated, pores about 12 to 18, small, in three series; last ventral plate triangular, small, sides moderately converging. Posterior pair of legs longer than penult, crassate in the male, slender in the female; claw large. Pairs of legs of male 51-55; of female 54-59. Length of male 27-33^{mm}; of female 34-52^{mm}.

Habitat.—Little Rock, Okolona, Arkadelphia, and Ultima Thule.

I refer this species provisionally to *L. robusta* (Meinert), although it differs from Meinert's description by rather unimportant characters. I have also seen specimens of this species from Tennessee.

21. *Linotaenia branneri*, sp. nov.

Frontal plate present. Fulvous, head and antennæ dark. Robust, strongly attenuated anteriorly, less posteriorly; moderately smooth, sparsely pilose. Prehensorial feet smooth, sparsely pilose; sternum subcordiform, wider than long (5:3); coxæ wider than long, unarmed; tooth strong, acute; claw large, curved. Cephalic plate subquadrangular, sides rounded, slightly diverging posteriorly; basal plate about half as long as cephalic, twice as wide as long, anterior margin scarcely covered by cephalic plate. Antennæ long, joints moderate, penult and antepenult longer than wide. Dorsal plates moderately smooth; anterior and posterior prescuta moderate, median larger. Spiracles round,

moderately large. Ventral plates with a distinct median sulcus; pores on posterior part. First pair of legs moderately short, anterior and posterior subequal. Posterior coxæ strongly inflated, pores large and small, about twelve. Anal legs of the female slender, claw large. Pairs of legs of female 43. Length of female 37^{mm}.

Habitat.—Little Rock.

This species is named in honor of Dr. J. C. Branner, State geologist of Arkansas.

The collection contains one specimen of this species. It is related to *bothriopa*, but is distinguished by a smaller number of legs and its large posterior coxa and pores.

22. *Geophilus perforatus* (McNeill).

Schendila perforata, McNeill, Proc. U. S. Nat. Mus., 325, 1887, (Pensacola, Fla.)

Abundant throughout the State.

23. *Geophilus okolonæ*, sp. nov.

Frontal plate absent; anal pores absent. Fulvous, head and antennæ darkest. Rather slender, very slightly attenuated anteriorly and posteriorly, smooth, very sparsely pilose and punctate. Prehensorial feet smooth, punctate, sternum wider than long (4:3.5); coxa of about equal length and width, unarmed; claw moderately curved; teeth almost obsolete. Cephalic plate slightly longer than wide, suboval, posterior margin truncate, sparsely punctate and pilose; prebasal plate exposed; basal plate much wider than long (5:2). Antennæ short, penult and antennal joints not noticeably shortened. Dorsal plates distinctly bisulcate. Anterior spiracle rather large, oval, oblique, median and posterior smaller. Ventral plate with an indistinct median sulcus; pores not manifest. First pair of legs short, anterior and posterior subequal. Posterior coxa scarcely inflated, pores absent; last ventral plate wide, side moderately converging, not densely pilose. Anal legs produced, armed, rather densely pilose beneath, crassate. Pairs of legs of male 61; of female 63. Length of body 40^{mm}.

Habitat.—Okolona.

There are two adults of this species in the collection. It is separated from other North American species by having no coxal pores and the prebasal plate exposed.

24. *Geophilus salemensis* Bollman.

I have seen one specimen that was collected near Little Rock by Mr. Hutcherson.

25. *Cryptops hyalinus* Say.

Cryptops hyalina Say, Journ. Phila. Acad. Nat. Sci., III, 1820 (E. Florida); Say, Oeuvres Ent., sp. 3, 1822; Newport, Trans. Linn. Soc. 409, 1844; Newport, Cat. Myr. Brit. Mus. Chil. 60, 1856; Wood, Trans. Amer. Philos. Soc. 168, 1865; Underwood. Ent. Amer., 65, 1887.

Cryptops hyalinus Koch, Syst. d. Myr., 175, 1847; Gervais, Aptères, IV, 293, 1847.

? *Cryptops milberti* Gervais, Aptères, IV, 592, 1847 (New Jersey).

? *Cryptops milbertii* Wood, Trans. Amer. Philos. Soc., 168, 1865; Underwood, Ent. Amer., 65, 1887.

Cryptops asperipes Wood, Proc. Phil. Acad. Nat. Sci., 129, 1867 (Montgomery County, Va.); McNeill, Proc. U. S. Nat. Museum, 328, 1887 (Pensacola, Fla.); Underwood, Ent. Amer., 65, 1887.

Cryptops sulcatus Meinert, Proc. Amer. Philos. Soc., 211, 1886 (Bee Spring, Ky.); Underwood, Ent. Amer., 65, 1887.

The study of a large series of specimens of the genus *Cryptops* has convinced me that all the species of *Cryptops* described from North America belong to a single species—*hyalinus* Say.

I have questioned the *Cryptops milberti* of Gervais, because the author states that the spines of the last pair of feet are absent. This character is contrary to the true definition of *Cryptops*, and I am inclined to think that either Gervais had an abnormal specimen or that his observations were incorrect.

Asperipes Wood, has been separated from the other species by the number of antennal joints (19), which he assigned to his species, but as the number of joints has recently been found to be variable it is not a true character upon which species can be based.

In Ent. Amer. 65, 1887, Dr. Underwood says the last pair of legs of *sulcatus* Meinert, are unarmed, as in *milberti* Gervais, but in this he is mistaken, for, in his generic description Dr. Meinert states that the last pair of legs are armed with a definite number of spines.

Considering this state of characters, I believe that all the described species should be united under *C. hyalinus*. I have examined specimens of this species from the following States: Maryland, Pennsylvania, Indiana, Tennessee, North Carolina, Florida, Indian Territory, and Arkansas, where it is very common.

26. *Theatops spinicaudus* (Wood).

Abundant from Little Rock to Ultima Thule.

27. *Scolopendra heros* Girard.

Two adults were obtained at Little Rock, several young at Murfreesboro and Muddy Fork.

28. *Scolopendra woodii* Meinert.

A single specimen was caught at Donaldson.

29. *Scolopocryptops sexspinosus* (Say).

Common at all points; these specimens are of a darker shade than northern or eastern examples.

30. *Henicops fulvicornis* (Meinert).

A single specimen was obtained at Little Rock near the Deaf Mute Asylum. This is a European species, and the only other recorded North American locality is Mount Lebanon, New York.

31. *Lithobius branneri* Bollman.

A single specimen was obtained at Okolona and another at Little Rock.

32. *Lithobius proridens* Bollman.

A few were obtained at Little Rock. One individual is considerably larger than any specimen collected before.

33. *Lithobius pinguis*, sp. nov.

Posterior angles of all the dorsal plates straight. Anal pair of legs armed with two claws. Coxal pores few, in a single series. Penultimate pair of legs armed with two claws. Coxæ of the posterior feet unarmed. Dark chestnut brown, head and antennæ dark, legs paler. Slender, not smooth, sparsely pilose; head wider than long (3.5:3), polished, not pilose. Antennæ short, 22 to 24 jointed, articles short. Ocelli 4 to 6, arranged in 2 or 3 series. Prosternal teeth 2+2. Coxal pores 3, 3, 3, 2 to 4, 4, 4, 4, round. Spines of the first pair of legs 0, 0, 1; penultimate pair 1, 3, 2, 1 to 1, 3, 3, 1; anal pair 1, 3, 2, 0. Posterior legs short. Female: Claw of the genitalia entire, stout and much curved; spines strong, subequal. Length of body 9-10^{mm}.

Habitat.—Little Rock.

This description is based on three specimens. This is the smallest North American species with the claw of the female genitalia entire.

34. *Lithobius celer*, sp. nov.

Posterior angles of the 9, 11, 13 dorsal plates produced. Anal pair of legs armed with one claw. Coxal pores few, in a single series. Penultimate pair of legs armed with two claws. Coxæ of the 13, 14, 15 pairs of feet laterally armed. Brown of various shades, head and legs more or less chestnut, antennæ dark. Moderately robust, smooth, sparsely pilose; head about as long as wide, pilose. Antennæ rather long, 30 to 34 jointed, articles small. Ocelli 18 to 40, arranged in 4 to 7 series. Prosternal teeth 5 + 5 to 7 + 7. Coxal pores 2, 3, 3, 2 to 5, 6, 6, 5, round. Spines of the first pair of legs 1, 2, 1 to 2, 2, 1; penultimate pair 1, 3, 3, 1 to 1, 3, 3, 2; anal pair 1, 3, 3, 1 to 1, 3, 3, 2. Posterior legs short. Male: Tibia of anal legs somewhat crassate, and furrowed beneath; but more furrowed in the female. Female: Claw of the genitalia short, tripartite, middle lobe much longer, others subequal; spines moderately slender, inner shortest. Length of body 15-25^{mm}.

Abundant or common throughout the State.

This species is not strongly related to any known North American species; it should be placed near *forficatus*, which it seems to replace in Arkansas.

Dr. Wood has reported *forficatus* from Arkansas and he may have had the species which I have described.

35. *Lithobius cædipes*, sp. nov.

Posterior angles of the 9, 11, 13 dorsal plates produced. Anal pair of legs armed with two claws. Coxal pores few, in a single series. Penultimate pair of legs armed with two claws. Posterior coxæ unarmed. Brown, head and antennæ dark, legs and ventral plates paler. Robust, not smooth, sparsely pilose; head smooth, of about equal length and breadth (3.2: 3.6). Antennæ short, attenuate, 24 to 26 jointed (♂, 26, ♀, 24). Ocelli 9 to 11, arranged in 3 or 4 series. Prosternal teeth 2 + 2 or 3 + 3. Coxal pores 3, 5, 4, 3 to 6, 5, 5, 5 round. Spines of the first pair of legs 1, 1, 1; penultimate pair 1, 3, 3, 2; anal pair 1, 3, 3, 1. Posterior pair of legs short. Male: Femur of the last pair of legs somewhat bent inwardly and swollen; tibia very strongly swollen, especially above, and having a bunch of hairs on the posterior third; first tarsal joint crassate. Penultimate pair of legs somewhat swollen, principally the tibia; first tarsal joint produced into a short lobe on the inner side. Female: Posterior pair of legs scarcely swollen; claw of the genitalia entire; spines 2-2. Length of male 15.4^{mm}; of female 20^{mm}.

Habitat.—Little Rock.

I have three specimens of this species. This is the only known species with both the anal and penultimate pairs of feet swollen or produced into lobes.

36. *Lithobius transmarinus* Koch.

Abundant at Little Rock, common at other localities.

37. *Lithobius mordax* Koch.

Common from Little Rock to Ultima Thule.

38. *Lithobius vorax* Meinert.

Found at all points where collections were made, but was more common at Little Rock.

39. *Lithobius multidentatus* Newport.

In a vial of Myriapods that were collected near Little Rock by Mr. Hutcherson, there is a single specimen of this species.

40. *Scutigera forceps* (Rafinesque).

One adult was seen at Arkadelphia, and several young at Little Rock.

INDIANA UNIVERSITY, March 28, 1888.

[From *Ann. N. Y. Ac. Sc.* x, 1888, pp. 106-112.]

NOTES UPON A COLLECTION OF MYRIAPODA FROM EAST TENNESSEE, WITH DESCRIPTION OF A NEW GENUS AND SIX NEW SPECIES.

BY CHARLES H. BOLLMAN.

[Read October 3, 1887.]

All the material in this interesting collection represents only two or three hours' collecting by Prof. Branner.

The discovery of a new genus and several new species in so short a time suggests that an unusually large amount of new material would be brought to light by careful collecting through East Tennessee.

Of the six new species described, one is from the vicinity of Knoxville (also found at the other localities), one from Mossy Creek, and four from Beaver Creek, Jefferson County.

The new genus is from the latter place.

The types of the new species belong to the Museum of the University of Indiana, and are there deposited.

A.—KNOXVILLE, KNOX COUNTY.

All the specimens from this locality were collected on May 21, 1887, in the woods about one mile south of the river at Knoxville, near the Maryville road.

1. *Parajulus pennsylvanicus* (Brandt).

Three females were obtained.

2. *Lysiopetalum lactarium* (Say).

Lysiopetalum eudasum McNeill, Proc. U. S. Nat. Mus., 330, 1887 (Bloomington, Ind.).

The collection contains one female, which agrees in all respects with the types of *eudasum*.

3. *Chaetaspis albus* Bollman.

Chaetaspis albus Bollman, Ent. Amer., 111, 46, 1887 (Bloomington, Indiana).

I can find no difference between the types of this species and the single female obtained.

4. *Polydesmus canadensis* Newport.

The collection contains three females, which I refer to this species, until males can be obtained.

5. *Fontaria* sp.

I place here two young females, which I cannot identify with any of the known species of *Fontaria*.

6. *Geophilus umbraticus* (McNeill).

Very common. These specimens differ very slightly from the types in the Museum of the Indiana University.

7. *Scoliopterus ruber* Bollman.

One specimen obtained.

8. *Scolopocryptops nigradius* McNeill.

Only one specimen obtained.

9. *Cryptops hyalinus* Say.

A few small individuals were found.

10. *Lithobius branneri*, sp. nov.

Subgenus *Archilithobius*.

Light chestnut brown or orange, head and antennæ scarcely darker, feet orange. Slender, smooth, very sparsely pilose; head rounded-triangular, narrowest before. Antennæ short, joints 20, short. Ocelli 6—8, arranged in four or five rows. Prosternal teeth 4, small. Coxal pores 2, 3, 3, 2—3, 4, 4, 3, small and round. First pair of feet armed with 0, 2, 1 spines; penultimate with 1, 3, 1, 1—1, 3, 2, 1; last with 1, 3, 1, 0; in the male its fifth joint is produced into a short pilose lobe, and is depressed. Claw of the female genitalia short, wide, bi- or tri-partite; spines slender, subequal, outer strongly toothed. Length of body, 5–10^{mm}.

Four males and three females were obtained. This species is dedicated to Prof. John O. Branner, by whom the collection was made.

11. *Lithobius proridens* Bollman.

A single specimen was obtained.

B.—BEAVER CREEK, JEFFERSON COUNTY.

These species were taken in open cedar thickets from May 21 to 26, 1887.

1. *Andrognathus corticarius* Cope.

Andrognathus corticarius Cope, Proc. Amer. Philos. Soc. 181, 1869 (Virginia).

Fifteen specimens of this species were obtained. They agree in most respects with Dr. Cope's description, but this genus will not form the

new family *Andrognathidae*, which he has set up for its reception. This genus belongs to the subfamily *Dolistenia*, and will somewhat modify the character of that group as given by Dr. Latzel.

2. *Lysiopetalum eudasum* McNeill.

3. *Striaria granulosa*, gen. et sp. nov. (*Chordeumidae*).

STRIARIA.

Body cylindrical, strongly resembling a *Lysiopetalum*. Dorsal plates, excepting the last, with 12 strong carinae, 6 on each side of the median line; between these there are 1-4 rows of round granular dots. First dorsal segment large, advanced forward and covering part of the ocelli. The carinae are apparently of the same number as the others, while the granular dots are more numerous. Last segment produced into a broad lobe, while the spines are short and wide, thus making the last segment appear as if incised. Ocelli present. Feet short and thick.

To the above generic characters may be added the following specific: Gray-brown first dorsal segment and feet pale. Robust, very slightly depressed, everywhere slightly granulated; body, with the exception of a setigerous granular dot between the first and second rows of carinae, not pilose; feet sparsely pilose. Ocelli present. Repugnatorial pore not discernible. Feet granulated, 44 were counted. Length of body, 12^{mm}; width, 1.5^{mm}.

The above descriptions were taken from a single female, which is curled in a spire, so that nothing of the head can be seen except a few ocelli. The pairs of feet were counted with uncertainty, some being probably hidden by the first dorsal segment.

This new genus may be distinguished from all previously known by the characters of the dorsal segments.

4. *Campodes flavicornis* Koch.

Seven specimens were obtained, which agree with the more Northern examples.

5. *Craspedosoma carinatum*, sp. nov.

Brown, feet pale, antennae dark, the joints tipped with white. Body rather slender, depressed, somewhat attenuated. Antennae about one-half times as wide as body, subclavate. Ocelli distinct, triangular, 16, arranged in 4 rows. Dorsal plates with numerous short carinae, lateral plates distinct. Length of body, 6^{mm}; width, .5^{mm}.

This species is described from a male and a female not quite full grown.

6. *Euryurus erythropygus* (Brandt).

Common.

7. *Geophilus umbraticus* McNeill.

Very common.

8. *Geophilus perforatus* (McNeill).

Schendyla perforata McNeill, Proc. U. S. Nat. Mus., 325, 1887 (Pensacola, Fla.).

Two specimens were obtained.

9. *Scolioplanes bothriopus* (Wood).

Only one specimen.

10. *Scolioplanes ruber* Bollman.**11. *Scolioplanes gracilis*, sp. nov.**

Frontal plate present. Orange, head and antennæ brownish. Slender, strongly attenuate anteriorly, less so posteriorly; smooth, sparsely pilose, feet more densely. Prehensorial feet sparsely pilose; sternum subcordiform, wider than long (5:2.3); coxa twice as wide as long, unarmed; last joint unarmed; claw moderately curved, excavated beneath, as long as the head is wide. Cephalic plate subquadrate, of almost equal length and width, posterior margin concealed by basal plate; prebasal plate concealed; basal plate four times as wide as long (4.5:1.2). First pair of feet short, anterior and posterior subequal. Posterior coxa rather strongly inflated, pilose; pores few, large and small, placed in two irregular rows along the ventral plate, which is very wide, sides rapidly converging and substraight. Last pair of feet of male rather slender, armed; of female somewhat more slender and armed. Pairs of feet of ♂, 80; of ♀, 83. Length of body ♂, 34.5^{mm}, width, 0.5^{mm}; ♀, 53.5^{mm}, width, 1.4^{mm}.

This species ought to form a new genus, but having only an adult female and a young male, I have not been able to examine the mouthparts.

It differs from *Scolioplanes* in the characters of the cephalic plate, prehensorial feet, and the last ventral plate and pair of feet.

12. *Scolopocryptops sexspinosus* (Say).

Specimens from this locality, as well as those from more Southern ones, differ in some important details from the Northern specimens, principally in having the last pair of legs more slender and the last ventral plate narrower; but these characters do not seem to warrant the formation of a different species.

13. *Scolopocryptops nigridius* McNeill.**14. *Theatops crassipes* (Meinert).**

Two specimens obtained, which agree with specimens from Florida.

15. *Cryptops hyalinus* Say.**16. *Lithobius Branneri* Bollman.**

Four specimens were found here,

17. *Lithobius cæcus*, sp. nov.

Subgenus *Archilithobius*.

Orange, head and last segments dark, feet and antennæ scarcely paler. Rather slender, smooth, sparsely pilose; head subrotund, longer than wide. Antennæ rather long, joints 31, short. *No trace of ocelli*, but darker colored in the place where they ought to be. Prosternal teeth 4. Coxal pores 2, 3, 4, 3, round. Spines of the first pair of feet, 2, 2, 1; penultimate, 1, 3, 2, 0; last, 1, 3, 1, 0. Last pair of feet moderately long. Claw of the female genitalia long, bilobed; spines slender, inner shortest. Length of body, 10^{mm}.

18. *Lithobius lundi* Meinert.

Two specimens obtained.

19. *Lithobius proridens* Bollman.20. *Lithobius cantabrigensis* Meinert.21. *Lithobius multidentatus* Newport.

Two specimens obtained.

C.—MOSSY CREEK, JEFFERSON COUNTY.

The species from this locality were taken in the woods half a mile northwest of the railway station, May 22, 1887.

1. *Parajulus pennsylvanicus* (Brandt).2. *Geophilus umbraticus* (McNeill).3. *Scolopocryptops nigridius* McNeill.4. *Cryptops hyalinus* Say5. *Lithobius branneri* Bollman.

Two specimens obtained.

6. *Lithobius similis*, sp. nov.Subgenus *Archilithobius*.

Brown, head and last segment orange; antennæ dark, feet somewhat paler. Moderately robust, rough, sparsely pilose; head subrotund, length and width subequal. Antennæ short, joints 21, short. Ocelli 16, arranged in 6 rows. Prosternal teeth, 4. Coxal pores, 4, 5, 5, 5, large and round. Spines of the first pair of feet, 1, 2, 1; penultimate, 1, 3, 3, 1; last, 1, 3, 1, 0. Posterior feet moderately long. Claw of the female genitalia moderately short, wide, tripartite, lobes short; spine short and stout. Length of body, 11^{mm}.

This species is described from one female; it is related to *pullus*, but differs from the latter in the characters of antennæ and the claw of female genitalia.

7. *Lithobius proridens* Bollman.

UNIVERSITY OF INDIANA,
Entomological Laboratory, June 8, 1887.

[From *Proc. U. S. Nat. Mus.*, xi, 1888, pp. 335-338.]

NOTES ON A COLLECTION OF MYRIAPODA FROM CUBA.

BY CHARLES H. BOLLMAN.

This paper is based on a small but interesting collection of myriapods that I have received from Prof. Felipe Poey, of Havana, Cuba.

As Prof. Poey did not mention any particular locality in the island of Cuba, I suppose that most of the species are from the vicinity of Havana.

I desire to tender my thanks to Prof. Poey for the material I have received from his hands, and to Dr. Juan Gundlach for a specimen of a *Sentigera*.

The types of the new species have been deposited in the U. S. National Museum.

1. *Siphonophora portoricensis* Brandt.

Siphonophora portoricensis Brandt, Bull. Acad. St. Petersburg, 1836 (*name only, teste Gervais*); Brandt, Recueil, 50, 1811 (*name only, teste Gervais*); Koch, Syst. Myr., 143, 1847 (*name only*); Gervais, Aptères, 209, 1847 (*name only*); Peters, Monatsber. kön. preuss. Akad. Wiss. Berlin, 549, 1864 (*first description*); Karsch, Ann. Soc. Ent. Belgique, 166, 1884.

Siphonophora cubana Karsch, Mittheil. Münch. Ent. Ver., 144, 1880; Borre, Ann. Soc. Ent. Belgique, 81, 1884.

I have received from Prof. Poey a dried *Siphonophora*, which I have been unable to separate from either *Siph. portoricensis* Brandt, or *Siph. cubana* Karsch.

Concerning the differences between these two species, Karsch, under his description of *Siph. cubana*, says:

“*An eadem species cum Siph. portoricensis* Br., *qua tamen capite basi latiore, rostro multo brevior et precipue longitudine multo minore satis differre videtur?*”

As such differences are practically valueless, it is best to consider *Siph. portoricensis* and *cubana* as forming one species.

2. *Nannolene cubensis*, sp. nov.

Diagnosis.—Related to *Nannolene burkei* Bollman, but the circular depressions along the transverse segmental sutures not extending all around the segment as in *burkei*, but only to the repugnatorial pore.

The following differences are also worthy of note:

Dark brownish-blue, posterior border of segments brown, an indistinct row of lateral spots, antennæ and legs light-brown. Ocelli dis-

tinct, about 16, arranged in 3 transverse series. Segments 47. Antennæ and legs stouter.

The above notes are based on a dried female, which was afterwards soaked in alcohol. As this is the first record of a species of this genus from Cuba, I have given it the specific name of *cubensis*.

3. *Paradesmus poeyi* Bollman. *Strongylosoma poeyi* Bollman, Ent. Amer., 82, 1887 (Cuba).

Abundant.

Through a misunderstanding of the description of *Paradesmus* I placed this species in *Strongylosoma*, and did not discover my mistake until after the description of the above species had been published.

This species should now be placed in the genus *Paradesmus*. It is very closely related to, if not identical with, *P. ricarius* Karsch, from Mayotti and Anjaani.

The copulation foot of the males of *poeyi* differs from that of *vicarius*, as figured by Karsch, in having the femoral part twice as long as the tibial, and the lower lobe of the tibial part is wide and thin, with a distinct median thickening, not cylindrical as in *vicarius*.

4. *Leptodesmus couloni*. *Polydesmus (Oxyurus) couloni* Humbert & Saussure, Myr. Nov. amer., 3, 1869 (Cuba).

Among the material sent by Poey is a dried female, which agrees perfectly with the descriptions of the above species.

5. *Stenonia maculata*, sp. nov.

Diagnosis.—Related to *Stenonia fimbriata* (Peters), but at once separated by the tuberculation of the dorsal plates, by the crenulation of lateral carinæ, by the character of anal segment and the pattern of coloration.

The following is a careful description of the species: Rosy, especially the tubercles; nearly all the repugnatorial pore bearing segments with a deep blotch on each side above the carinæ; antennæ dark, legs pale. Body wide, convex, not attenuated anteriorly, slightly posteriorly. Antennæ short, subclavate. First segment very wide, completely concealing the head as in *fimbriatus*; a row of small scales along the posterior margin; two large median scales; along anterior margin a row of twelve rectangular scales, between the third and fourth from posterior angle a distinct notch, between the others a slight waviness. Other segments with three distinct rows of scales with smaller ones interspersed; lateral carinæ crenulate the first six, the eighth, eleventh, and fourteenth, with two crenulations, the rest with three; a distinct median dorsal line. Anal segment with six tubercles along posterior margin; preanal scale obtuse, with two long, slender spines.

Length, ♂ 9^{mm}, ♀ 12.5^{mm}; width, ♂ 2.2^{mm}, ♀ 2.8^{mm}.

This new species belongs to the subgenus *Stenonia* (= *Platyrrhacus*).

Among the material sent by Prof. Poey is a dried male and female of this species.

6. *Rhacophorus magnus*, sp. nov.

Diagnosis.—Related to *R. marantus* (Karsch), but with an indistinct row of tubercles along anterior and posterior margins of segments, and a few on lateral carinæ.

Description of species.—Brown, legs light chestnut; robust, wide and depressed, slightly attenuated anteriorly. Segments with a transverse sulcus as in *marantus*; tubercles indistinct, arranged in a more or less irregular row along the margins, three or four large scales on lateral carinæ; lateral carinæ large, strongly margined, anterior angles rounded, posterior much produced. Repugnatorial pore large, subapical, marginal. Length of last fourteen segments 22.5^{mm}, width of seventh segment 4.3^{mm}.

The type of this species is a mutilated female, of which the head and first six segments are lost. On account of this I have been unable to determine the subgenus unless it belongs to the same as *marantus*. Karsch has described two other species of this genus from Cuba, but both belong to the subgenus *Cryptodesmus* and lack the transverse dorsal sulcus. This is the largest *Rhacophorus* known.

7. *Orphnæus brasiliensis* Meinert.

The collection contains a fine female, which agrees very well with Dr. Meinert's description of this species. This is the first record of this species from the West Indies.

8. *Mecistocephalus punctifrons* Newport.

There are a few specimens in the collection which I refer to this species, agreeing with Dr. Meinert in considering *M. guildingii* a doubtful species and identical with *M. punctifrons*.

9. *Scolopendra alternans* Leach.

One female of this species sent by Professor Poey.

10. *Newportia longitarsis* Newport.

Scolopocryptops longitarsis Newport, Linn. Trans., 407, pl. 40, fig. 10, 1844 (St. Vincent).

Newportia longitarsis Gervais, Aptères, iv, 298, 1847; Newport, Cat. Myr. Brit. Mus., 57, 1856.

Rufous, head and posterior border of segments darkest, antennæ and legs pale. Moderately robust, smooth, sparsely punctate. Head sub-oval, sparsely punctate and pilose, not margined, posterior half with two longitudinal sulci. Antennæ short, attenuate, 17 jointed, basal joints crassate, all except the first two hirsute. Prosternum not prominent, callose, sinuate. Anal legs very long and slender, somewhat depressed, femora armed with about 22 large and small hooked spines which are arranged in four or five series, tibia with two long spines beneath, femora and tibia with numerous hooked hairs on the inside. Penultimate pair of legs with the tibia and first tarsal joint also furnished with numerous hooked hairs.

Dorsal plates with six sulci, the median straight or slightly curved inwards, the others outwards. Posterior pleuræ scabrous; pores numerous, small; terminal spine large and robust. Last ventral plate moderately wide, sides converging, posterior border sinuate. Length 28^{mm}, width 3^{mm}.

In the collection are two specimens which I refer to this species. Both have lost most of their legs, especially the anal, of which only one remains and even it is in a mutilated condition so that the tarsal joints can not be counted.

11. *Scutigera* sp. ?

I have received from Poey and Gundlach several specimens of a *Scutigera*, which I have been unable to identify satisfactorily with any of the known species.

INDIANA UNIVERSITY,

Bloomington, Ind., June 1, 1888.

[From *Proc. U. S. Nat. Mus.*, xi, 1888, pp. 339-342.]

NOTES ON A COLLECTION OF MYRIAPODA FROM MOSSY CREEK
TENN., WITH A DESCRIPTION OF A NEW SPECIES.

BY CHARLES H. BOLLMAN.

The following list of myriapods is based upon an extensive collection made at various times by Mr. Charles B. Branner, of Mossy Creek, Tenn. As the material was collected in all seasons of the year, and a large number of species found, it is safe to say that this list is almost complete.

Notes on a small collection made at Mossy Creek and other places in East Tennessee, by Dr. John C. Branner, were published in the *Ann. N. Y. Acad. Nat. Sci.* for 1887; but in this list there are no species mentioned as occurring at Mossy Creek which have not been found by Mr. Charles B. Branner.

I here desire to express my sincere thanks to Mr. Charles B. Branner for the numerous specimens he has so kindly sent me.

1. *Andrognathus corticarius* Cope.

Common. The number of segments vary from 55-65 in the adult specimens. The fifth and sixth antennal joints are not united as Cope has stated, but are distinctly separate, the sixth being the largest joint.

2. *Nemasoma minutum* (Brandt).

In one lot of material sent were six specimens of this species.

3. *Parajulus pennsylvanicus* (Brandt).

Abundant.

4. *Cambala annulata* (Say).

Abundant. All the specimens of this species which I have received from East Tennessee and North Carolina (Balsam and Chapel Hill) are very large (45-52^{mm}), and of a very dark-brown shade, while those which I have examined from other localities (Indiana and Arkansas) are much smaller (26-38^{mm}) and of a light yellowish-brown shade. Specimens from the latter localities may represent a geographical species, but it is hard to say what form Say described, although his description may apply to the former, as his specimens were from Georgia and Florida.

5. *Lysioptalum lactarium* (Say).

Very common.

6. *Striaria granulosa* Bollman.

One female of this species was found in the collection.

This specimen is curled in the same manner as the type specimen, and no more important characters can be ascertained until one of the specimens is torn to pieces.

7. *Campodes flavicornis* Koch.

This seems to be a rare species in this locality.

8. *Fontaria evides* Bollman.

No others besides the two type specimens of this species were found.

9. *Fontaria tennesseensis*, sp. nov.

Diagnosis.—Related to *Fontaria castanea* (McNeill), but the lateral carinae larger, and the copulation foot of male different.

Type.—U. S. Nat. Museum; No. 203, Mus. Ind. Univ.; No. 388, author's coll.

Description.—Brown, lateral carinae pink; an indistinct dark median dorsal line; legs and underparts yellow. Body depressed; anterior segments of female noticeably attenuated; segments smooth, marked with numerous short lines; papillae prominent, especially on lateral carinae. Vertex sulcus moderate; occipital, antennal, and clypeal foveolae single. Lateral carinae large, moderately produced; repugnatoriapores large and placed on the upper edge of the posterior third of the carinae. Ventral plates produced into a short, straight cone; coxae unarmed. Male: Segments more depressed than in the female, antennae more crassate. Copulation foot deeply bifid; the inner or shorter branch cylindrical, tapering, twisted at base; outer or seminal branch somewhat flattened and wavy, end slightly expanded. Length, 23–27^{mm}; width, 5–7^{mm}.

Tennesseensis is very closely related to *castanea* in all points except the copulation foot and lateral carinae. From *oblonga* it is separated by not having the posterior border of segments red (white, acc. to Koch, but this is probably due to immersion in alcohol). No. 388 contains five specimens, two males and three females, of which two have been deposited in the U. S. National Museum. No. 203, Mus. Ind. Univ., contains a female of this species.

10. *Euryurus erythropygus* (Brandt).

Common.

11. *Scytonotus setiger* (Wood).

There are ten specimens of this species in the collection.

12. *Polydesmus branneri* Bollman.

Not common.

13. *Linotænia ruber* Bollman.

Not common.

14. *Linotænia bidens* (Wood).

One specimen of this species obtained.

15. *Linotænia robusta* (Meinert).

Common.

16. *Linotænia fulva* (Sager).

Strigamia fulva Sager, Proc. Phila. Acad. Nat. Sci., 1856.

Strigamia bothriopa Wood, Journ. Phila. Acad. Nat. Sci., 1861.

Not common.

17. *Scoliopterus gracilis* Bollman.

Although this species belongs to a new genus, I do not care here to erect a genus for its reception. I prefer to wait until I can obtain more specimens in order to satisfactorily make an examination of the mouth parts.

18. *Geophilus varians* McNeill.

One specimen, ♀, pairs of legs 57.

19. *Geophilus umbraticus* (McNeill).

Abundant.

20. *Scolopocryptops sexspinosus* (Say).

Common.

21. *Scolopocryptops nigradius* McNeill.

Common.

22. *Theatops posticus* (Say).

Not common.

23. *Theatops spinicaudus* (Wood.)

Common.

24. *Cryptops hyalinus* (Say).

Abundant.

25. *Scolopendra woodi* Meinert.

One specimen in the collection.

26. *Lithobius prordens* Bollman.

Not common.

27. *Lithobius trilobus* Bollman.

Lithobius similis Bollman, Ann. N. Y. Acad. Nat. Sci., 112, 1887 (*Mossy Cr.*, Tenn.).

I now consider *similis* as identical with *trilobus*. Only the type specimen of *similis* was obtained.

28. *Lithobius lundii* Meinert.

Not common.

29. *Lithobius branneri* Bollman.

Common.

30. *Lithobius cantabrigensis* Meinert.

Rare.

31. *Lithobius juvenus* Bollman.

Not common.

32. *Lithobius multidentatus* Newport.

Common. Some of the specimens have the coxæ of the anal legs armed laterally with two spines.

INDIANA UNIVERSITY, *October 20, 1888.*

[From *Proc. U. S. Nat. Mus.*, xi, 1888, p.316.]

DESCRIPTION OF A NEW SPECIES OF INSECT, *FONTARIA PULCHELLA*, FROM STRAWBERRY PLAINS, JEFFERSON COUNTY, TENNESSEE.

BY CHARLES H. BOLLMAN.

Fontaria pulchella, sp. nov.

Diagnosis.—Related to *F. oblonga** Koch, but the lateral carinæ smaller, and produced into a sharp point posteriorly; repugnatorial pore subinferior; ventral spine large, cylindrical, tapering, curved outwards.

Type.—U. S. Nat. Mus.; No. 404, Author's coll.

Description.—Brown, lateral carinæ and posterior border of segments red; legs and under parts yellow. Body very robust, anterior segment scarcely attenuated; smooth, with numerous short lines, as in *castanea* and *tennesseensis*; papillæ less prominent. Vertex sulcus distinct; foveolæ single. Lateral carinæ small, margins swollen and produced posteriorly into a sharp point. Repugnatorial pore large, subinferior, subapical. Ventral plate armed; coxæ unarmed. Length, 20^{mm}; width, 4.3^{mm}; height, 4.2^{mm}.

Dr. Koch's figure of *Fontaria oblonga* represents a species which is more depressed, lateral carinæ larger, and the repugnatorial pores not subinferior, but on the upper side as in *castanea* or *tennesseensis*.

The white with which he says the lateral carinæ and posterior border of segments are colored is probably red, faded by bad alcohol.

This species is described from two females collected at Strawberry Plains by Mr. Charles B. Branner, of Mossy Creek, Tennessee.

INDIANA UNIVERSITY, November 1, 1888.

* *Fontaria oblonga* Koch, Syst. Myr., 142, 1847 (Pennsylvania).

[From *Proc. U. S. Nat. Mus.*, xi, 1888, pp. 343-350.]

NOTES UPON SOME MYRIAPODS BELONGING TO THE U. S.
NATIONAL MUSEUM.

BY CHARLES H. BOLLMAN.

Through the kindness of Dr. Charles V. Riley, I have received for examination the unidentified lot of myriapoda contained in the collection of the U. S. National Museum.

This lot contains both foreign and domestic species, but in this paper I have only given notes upon the forms found in the United States.

In addition, I have included several notes upon some material sent to me by Prof. L. M. Underwood, of Syracuse, N. Y.

These specimens originally belonged to a collection, the remainder of which he had presented to the Museum, and has been sent to me among the material received from Dr. Riley.

I desire to tender my thanks to Dr. C. V. Riley, Mr. J. B. Smith, and to Prof. L. M. Underwood for various favors.

1. *Polyzonium rosalbum* (Cope). Marquette, Mich.; E. A. Schwarz.

This specimen, a female, differs from any I have seen in having the general coloration more intensified. Dorsal plates reddish brown, paler posteriorly and along margins; antennæ almost black; face and legs mottled with a purplish shade.

2. *Platydesmus lecontei* (Wood). Acc. 19542, 9, Tallulah, Ga.; L. M. Underwood. Segments 39-49.

3. *Spirobolus hebes* (Bollman). Acc. 14530, San Diego, Cal. Segments 47, ♀.

4. *Spirobolus marginatus* (Say). (†) Virginia, Kuehling. Acc. 19542, 13, Tallulah, Ga.; L. M. Underwood. Acc. 19542, 12, Macon, Ga.; L. M. Underwood. Segments of males 53-55, segments of females 52-57.

5. *Spirobolus spinigerus* (Wood). Acc. 19343, Cape Romano, Fla.; F. B. Meek. Segments of female, 47-49.

6. *Spirostreptus montezumæ* (Saussure). El Paso, Tex.; Potts.

The specimen before me seems to agree in all respects with the descriptions of *S. montezumæ*, which has only been found in the provinces of Vera Cruz and Orizaba, Mexico. This is the first record of any species of this genus from the United States.

7. *Parajulus canadensis* (Newport). Luray, Va.; L. M. Underwood.

These specimens agree in all respects with the females of *canadensis*, but a male might show some secondary sexual differences. Segments 48-53. Last segment only completely mucronate in about half the specimens.

8. *Parajulus venustus* (Wood). West Cliff, Colo.; T. D. A. Cockerell.

9. *Parajulus impressus* (Say). Acc. 19542, 7, Tallulah, Ga.; L. M. Underwood. Acc. 19542, 17, Indian Springs, Ga.; L. M. Underwood. Segments 55.

10. *Parajulus pennsylvanicus* (Brandt). Luray, Va.; L. M. Underwood. Acc. 19542, 8, Macon, Ga.; L. M. Underwood.

11. *Lysiopetalum lactarium* (Say). Acc. 19542, 16, Indian Springs, Ga.; L. M. Underwood.

12. *Campodes flavicornis* (Koch). Washington, D. C.; J. B. Smith.

13. *Leptodesmus varius* (McNeill). Macon, Ga.; L. M. Underwood.

I have received from Professor Underwood a young female which agrees in all essential points with the types of *varius* from Pensacola, Fla.

14. *Fontaria crassicutis* (Wood). Acc. 19542, 2, Indian Springs, Ga.; L. M. Underwood. ♂.

Ventral plate and coxæ unarmed; that part of ventral plate which lies between the two pairs of legs of 11-16th segments produced into a conical lobe; legs densely but shortly pilose; color brown, lateral carinæ and under parts yellow. Length, 70^{mm}; width, 15^{mm}.

15. *Fontaria georgiana*, sp. nov.

Diagnosis.—Probably related to *F. virginensis*, but the ventral plates and coxæ sharply spined; the upper branch of genitalia bifid.

Habitat.—Lookout Mountain, Tallulah and Macon, Ga.; L. M. Underwood.

Type.—Acc's 19542, 4, 6, 10, 11, 20; U. S. Nat. Museum.

Description.—Dull brown, lateral carinæ; a median dorsal row of spots and underparts yellow. Segments considerably wrinkled. Vertex sulcus shallow, occipital foveolæ 2+2, antennal and clypeal single. Lateral carinæ large, interlocking, posterior angles scarcely produced. Repugnatorial pore large, placed on the upper side of margin near the middle. Ventral spines sharp; coxæ spined. ♂: Segments more depressed than in the female, and antennæ more crassate. Coxæ of copulation foot pilose and armed above with a large, straight spine, as in *F. virginensis*. Distal halves of copulation foot curving away from each other, but the ends come together and interlock; bifid, the lower branch cylindrical, tapering and slightly curved upwards, the upper branch bifid, the seminal branch of which is flattened, the other is a cylindrical hooked spine. Length, 28-35^{mm}.

This species shows relationship to *F. virginiensis* by the coxæ of copulation foot being provided with a long, straight spine. It also agrees with the more eastern specimens of *F. virginiensis* by having the ventral plates and coxæ spined. *F. georgiana* is described from numerous specimens from Macon, a few from Tallulah, and one from Lookout Mountain.

16. *Fontaria tallulah*, sp. nov.

Diagnosis.—Ventral plates and coxæ spined as in *F. georgiana*, but separated from that species by having the lateral carinæ and posterior margin of dorsal plates red; posterior angle of lateral carinæ rather sharply produced.

Habitat.—Tallulah, Ga.; L. M. Underwood.

Type.—Acc. 19542, 20; U. S. Nat. Museum.

Description.—Brownish black, lateral carinæ and posterior border of each segment red; antennæ, legs, and underparts yellow. Segments depressed, anterior segment moderately attenuated; corrugated, especially posteriorly and on lateral carinæ; papillæ distinct; vertex sulcus distinct; occipital foveolæ 2+2, antennal and clypeal single (1+1). Lateral carinæ large, interlocking, posterior angle rather sharply produced. Repugnatorial pores large, placed on the upper margin of posterior third. Ventral spines straight, stout, and conical, coxæ armed. Length, 25^{mm}.

F. tallulah seems to be only related to *F. georgiana* by having the ventral plates and coxæ spined. In the pattern of coloration it approaches *F. rubromarginata*, but that species has the ventral plates unarmed and therefore belongs to the same section as *F. corrugata*, *evides*, etc. This species is described from an apparently adult female.

17. *Fontaria rileyi*, sp. nov.

Diagnosis.—Brown, lateral carinæ red; ventral plate and coxæ unarmed; copulation foot stout, flattened, end subsimilar to a bird's head.

Type.—Acc. 19542, 5, U. S. Nat. Museum.

Habitat.—Macon, Ga.; L. M. Underwood, ♂.

Description.—Brown, lateral carinæ red; antennæ, legs, and underparts yellow. Segments moderately depressed, scarcely attenuated anteriorly; very corrugated, papillæ not prominent; behind each pore an indistinct black swelling. Vertex sulcus shallow; occipital, antennal, and clypeal foveolæ single. Lateral carinæ large, interlocking, posterior angle not much produced. Repugnatorial pores large, placed on the posterior third of margin. Ventral plate unarmed; coxæ not or very slightly armed; femora strongly armed; claws normal. Male: Copulation foot stout, flattened, curved, end subsimilar to a bird's head. Length, 43.5^{mm}; width, 10.2^{mm}.

This species belongs to the same group as *F. corrugata*, *evides*, etc., and should stand near the latter, as shown by the form of the copulation foot. It is separated from *F. evides* by having the copulation foot

more flattened, especially the end, which is cylindrical in *evides*; besides *F. rileyi* attains a larger size.

This species is described from a male specimen.

I take great pleasure in dedicating this species to Dr. C. V. Riley, United States Entomologist, to whom I am indebted for numerous favors.

18. *Euryurus erythropygus australis*, subsp. nov.

Diagnosis.—Similar to *E. erythropygus*, but the lateral carinae larger, the margin less swollen, more straight, and the denticules larger. Upper branch of copulation foot five times as long as the lower. Body slenderer.

Type.—Acc. 19542, 18, Indian Springs, Ga.; L. M. Underwood, ♂.

When compared with *E. erythropygus* this new geographical species plainly differs from it by the characters given. The lateral margin of carinae are also slightly crenulate and the anterior is somewhat serrate. Length, 28^{mm}; width, 3.4^{mm}.

The exceedingly long branch of the copulation foot at once separates *australis* from the true *erythropygus*. The inner tooth is also absent, but this is subject to slight variations in *erythropygus*.

The above notes are taken from a male which is slightly broken.

19. *Polydesmus branneri* Bollman. Acc. 19542, 23, Tallulah, Ga.; L. M. Underwood.

These specimens are all females, and I refer them to this species with some doubt, but as they are from the region in which *P. branneri* is found they must belong to that species and not to *P. serratus*, which is not quite so southern in its range.

20. *Polydesmus serratus* Say. Marksville and Natural Bridge, Va.; L. M. Underwood.

21. *Linotaenia chionophila* Wood. † No. 89, U. S. Nat. Mus., Washington, D. C.; J. B. Smith.

Pairs of legs of female 37–41.

22. *Linotaenia fulva* Sager. Acc. 19542, 15, Indian Springs, Ga.; L. M. Underwood.

Pairs of legs of male 51.

23. *Linotaenia parviceps* Wood. Acc. 17414, Baird, Shasta County, Cal.; L. M. Green.

Pairs of legs of male 79.

24. *Geophilus foveatus* McNeill. Lookout Mountain; L. M. Underwood.

Pairs of legs of female 43; pleural pores less numerous than in the northern specimens.

25. *Geophilus umbraticus* McNeill. West Cliff, Colo.; T. D. A. Cockerell.

Pairs of legs of female 49–51.

26. *Geophilus virginiensis*, sp. nov.

Diagnosis.—Related to *G. mordax*, but on the anterior ventral plates,

especially the 7-13th, an ovate depressed poriferous area along the anterior margin, into which projects a conical elongation of the preceding segment; coxæ of prehensorial legs of about equal length and breadth.

Habitat.—Natural Bridge, Va.; L. M. Underwood.

Type.—U. S. Nat. Museum.

As is indicated by the above diagnosis, this new species is closely related to *G. mordax*.

My specimen is a male, and as *G. mordax* is described from a female the following secondary differences are worthy of notice:

Anal legs moderately crassate, densely and shortly pilose; claw large; pairs of legs 49; length 35^{mm}.

If the characters given in this diagnosis are those peculiar to a male, this new species must be identical with *mordax*, but the proportions of the coxæ of prehensorial legs seem to convince me that they are not markings peculiar to a male.

27. *Geophilus smithi*, sp. nov.

Diagnosis.—Related to *G. huronicus*, but the coxal pores more numerous, 25-30; coxæ of prehensorial legs of about equal length and width; pairs of legs of female 49; length 20-28^{mm}.

Habitat.—Washington, D. C.; J. B. Smith.

Type.—U. S. Nat. Museum.

This species is very closely related to *G. huronicus*, but it seems to be sufficiently distinct as shown by the number of coxal pores, which are 25-30 in number in *smithi*, but only 7 or 8 in *huronicus*; also by the number of pairs of legs (*huronicus*, ♂ 53-55, ♀ 55-57).

This species is described from two females, one of which is an adult, the other being about three-fourths grown.

28. *Geophilus bipuncticeps* Wood. Macon, Ga.; L. M. Underwood.

Pairs of legs, ♂ 55, ♀ 55-59.

29. *Scolopocryptops sexspinosus* Say.

Scolopocryptops georgicus Meinert, Proc. Amer. Phil. Soc., 180, 1886 (*Georgia*).
Acc. 19542, 24, Tallulah, Ga.; L. M. Underwood. Acc. 19542, 14, Indian Springs, Ga.; L. M. Underwood. Luray, Va.; L. M. Underwood.

The specimens contained in the first two vials seem to belong to that phase of *S. sexspinosus* which has been described by Meinert under the name of *S. georgicus*. The only real tangible difference I can find between these specimens and the true *sexspinosus* is in the moderately toothed condition of the prosternum, and I think it is best to consider *georgicus* as not a valid species.

30. *Theatops posticus* Say. Acc. 19542, 3, Macon, Ga.; L. M. Underwood. Luray and Natural Bridge, Va.; L. M. Underwood.

31. *Cryptops hyalinus* Say. Natural Bridge, Va., and Lookout Mountain; L. M. Underwood.

Serratures of anal legs 6-2.

32. *Scolopendra woodi* Meinert. Acc. 19542, 1, Indian Springs, Ga.; L. M. Underwood.

33. *Scolopendra heros* Girard. Florida, F. B. Meek; Fort Reynolds, A. Clough.

34. *Scolopendra pachypus* Kohlrausch. Acc. 4631, San Diego, Cal.

As shown by the character of the anal legs this species seems to be sufficiently distinct from *heros*.

35. *Lithobius proridens* Bollman. Washington, D. C.; J. B. Smith.

One specimen.

36. *Lithobius obesus* Stuxberg. No. 73a, U. S. N. M., Salt Lake City, Utah.

In this vial, along with a few hexopods, I found a male *Lithobius*, which I provisionally refer to this species.

As this is a male, the following differences are worthy of notice:

Antennæ 22-jointed; coxal pores 2, 3, 4, 3; spines of first pairs of legs 2, 3, 2; of anal pair 1, 3, 2, 0; anal legs of male moderately crassate, tibia slightly swollen, excavated on the inner side near the base and the upper interior angle produced into a slight pilose lobe; last tarsal joints of legs more densely pilose beneath than the rest.

In the character of the anal legs this specimen agrees with *paradoxus*, but that species has the number of coxal pores and the spines of the anal legs less.

37. *Lithobius elattus*, sp. nov.

Diagnosis.—Related to *L. pullus*, but spines of anal legs, 1, 3, 2, 0, or 1, 3, 1, 0; joints of antennæ 20–22; tarsal lobe of anal legs of male larger; size smaller than *L. pullus*.

Habitat.—Washington, D. C. (J. B. Smith); Marksville, Va. (L. M. Underwood).

Type.—U. S. Nat. Museum.

Description.—Light brown, head and antennæ darker; tip of antennæ rufous. Moderately robust, smooth, sparsely pilose; head of about equal length and breadth. Antennæ moderate, articles 20–22. Ocelli 8–10, arranged in 3–4 series. Prosternal teeth 2 + 2. Coxal pores 2, 3, 3, 2–3, 4, 4, 3, round. Spines of first pair of legs 1, 2, 1; of penultimate pair 1, 3, 3, 2; of anal pair 1, 3, 2, 0–1, 3, 1, 0.

Male: Anal legs more crassate; first tarsus of anal legs prolonged into a pilose lobe at its upper anterior angle. Female: Claw tripartite, short and wide; spines 2 + 2, short and stout, end flattened and barely serrate. Length 8–9.5^{mm}.

This species is described from four specimens, three females and one male from Washington, D. C., and a male from Marksville, Va.

Although the above descriptions hardly seem to do justice in separating this new species from *L. pullus*, yet, when we place the two species side by side, they can not be mistaken, as the size of *pullus* is always 2–4^{mm} larger.

Time may prove that this new species is only an eastern variety of *L. pullus*, but until intermediate specimens are found it is best to consider them as distinct species.

38. *Lithobius kochi* Stuxberg. West Cliff, Colo.; T. D. A. Cockerell.

Anal legs armed with two claws. Coxal pores few in a single series. Penultimate pair of legs armed with two claws. Coxæ of last two pairs of legs laterally armed. Testaceous brown, antennæ and head darkest, legs paler. Moderately slender, smooth, sparsely pilose; head of about equal length and breadth. Antennæ short, reaching to the fifth segment, articles 20. Ocelli 8 or 9, arranged in 4 series. Prosternal teeth 2 + 2. Coxal pores 2, 2, 3, 3-3, 3, 3, 3, round. Spines of first pair of legs 1, 1, 1; of penultimate pair 1, 3, 3, 2; of anal pair 1, 3, 2, 0.

Male: Anal legs somewhat stouter than those of female. Female: Claw of genitalia bipartite, short and wide; spines 2 + 2; inner much shorter. Length 7-7.8^{mm}.

I at first considered these specimens as representing a new species, but as the apparent differences gradually dwindled down to the number of spines of the first pair of legs, I finally concluded that they were identical with *kochi*, which has only been found at Saucelito, Cal.

For the sake of completeness I have given a description of the specimens.

39. *Lithobius atkinsoni* Bollman. Macon, Ga.; L. M. Underwood.

Among the material sent by Dr. Underwood are three specimens, two females and one male that I refer to this species.

The following points are worthy of notice: Antennæ 21-33 articulated; ocelli 8-20, arranged in 4-7 series; prosternal teeth 5+5 or 7+7; coxæ of last three pairs of legs laterally armed; coxal pores 3, 4, 4, 4-6, 7, 7, 6, round or transverse; spines of first pair of legs, 1, 2, 1 or 2, 3, 1; spines of anal and penultimate pairs 1, 3, 3, 1; last two tarsal joints of anal and penultimate pairs of legs of male sulcate on the inner side.

40. *Lithobius xenopus*, sp. nov.

Diagnosis.—Related to *L. mordax*, but the femoral and tibial joints of the anal legs of male strongly modified.

Habitat.—Macon, Ga.; L. M. Underwood.

Type.—Acc. 19542, 22, U. S. Nat. Museum.

Description.—Brown, head rufous, antennæ dark, legs pale. Moderately slender, rather smooth, sparsely pilose; head wider than long (4:3). Antennæ moderately long, reaching the seventh segment, articles 30, short. Ocelli 32, in 7 transverse series. Prosternal teeth 6+7. Coxal pores 6, 6, 6, 4, round. Spines of first pair of legs 2, 3, 2; of penultimate pair 1, 3, 3, 2; of anal pair 1, 3, 3, 2. Claws of anal and penultimate pairs of legs single. Coxæ of the last three pairs of legs laterally armed.

Male: Anal legs moderately short; femora considerably swollen on the inner side, and armed on the posterior half with two large, slightly curved, bluntly serrated spines; tibia excavated on the inner side; the posterior half produced into a bipartite contorted lobe, of which the posterior is armed with a short, curved, sharply serrated spine. The last two tarsal joints of anal and penultimate pairs of legs sulcate on the inner side. Length, 17.5^{mm}.

Although the males of nearly every species of the subgenus *Neolithobius* show some modifications of the anal legs, yet this species presents a curious peculiarity and approaches to that of *L. bilabiatus* in the extent of the modification. The above description is based upon a single male specimen.

41. *Lithobius latzei* Meinert. Marksville and Luray, Va.; L. M. Underwood.

Antennæ, 29-34; coxal pores, 5, 6, 5, 4-6, 7, 7, 6; prosternal teeth, 9+9 or 10+10; spines of first pair of legs, 2, 3, 2; spines of anal and penultimate pairs, 1, 3, 3, 2.

42. *Lithobius underwoodi*, sp. nov.

Diagnosis.—Related to *L. juvenus*, but the prosternal teeth 6+7; coxal pores, 7, 7, 7, 6, transverse; size much larger.

Habitat.—Macon, Ga.; L. M. Underwood.

Type.—Acc. 19542, 22; U. S. Nat. Museum.

Description.—Dark shining brown, head and antennæ darkest, legs paler. Robust, attenuated posteriorly, moderately smooth; head wider than long (4:3). Antennæ long, extending to the tenth segment, articles 32. Ocelli 25, in 6 transverse series. Prosternal teeth 6+7. Coxal pores, 7, 7, 7, 6, transverse. Spines of first pair of legs, 2, 3, 2; of penultimate and anal pair, 1, 3, 3, 2. Anal and penultimate pairs of legs each with two claws. Coxæ of the last three pairs of legs laterally armed.

Female: The last two tarsal joints of anal and penultimate pairs of legs sulcate on the inner side; claw of genitalia large and long, indistinctly tripartite; spines 2+2, stout, inner shortest. Length, 20^{mm}.

This species is very different from *L. juvenus*, which is the only North American species belonging to the same group, although they may have originally sprung from the same stock. This species is described from a female which has the anal pairs of legs broken off.

43. *Lithobius rex*, sp. nov.

Diagnosis.—Related to *L. validus*, of Europe, but the antennæ 20-jointed.

Habitat.—Tallulah, Ga.; L. M. Underwood.

Type.—Acc. 19542, 21; U. S. Nat. Museum.

Description.—Grayish-brown, head, antennæ, first dorsal plate, and margins of others dark. Robust, attenuated posteriorly, dorsal plates much wrinkled, sparsely pilose; head wider than long (6:5). Antennæ

long, extending to the ninth segment, articles 20, long. Ocelli 19, in 6 transverse series. Prosternal teeth 9+9. Coxal pores, 8, 8, 8, 7, large, transverse. Spines of the first pair of legs, 1, 3, 2; of the penultimate pair, 1, 3, 3, 2; of anal pair, 1, 3, 2.

Female: Claw of genitalia wide and short, tripartite; spines 2+2, short and stout, ends flattened and obscurely serrate. Length, 25^{mm}.

This species is described from a female specimen, which has the fourth segment considerably angulated, and I at first placed it in a new subgenus. But a study of *multidentatus* showed that the angulation of the fourth dorsal plate was subject to considerable variation.

This is the only North American species of the subgenus *Eulithobius* that has the coxal pores in a single series, and in this respect approaches *L. validus* of Europe; but that species has 40-48 antennal joints. Acc. 19542, 21 contains a female of this species.

44. *Lithobius multidentatus* Newport. Marksville and Natural Bridge, Va.; L. M. Underwood.

INDIANA UNIVERSITY, *December 1, 1888.*

[From *Proc. U. S. Nat. Mus.*, XI, 1888, pp. 403-410.]

CATALOGUE OF THE MYRIAPODS OF INDIANA.*

BY CHARLES H. BOLLMAN.

The following catalogue of the myriapods of the State of Indiana is based largely upon the material contained in the museum of the Indiana University and my own private collection. I have also included any notes, bearing upon the myriapods of Indiana, that I have found in the papers of other authors. The material in the museum of the Indiana University and my own collection is principally from the following localities:

Boswell, Benton County.....	D. M. Mottier.
La Fayette, Tippecanoe County	F. M. Webster.
Kokomo, Howard County	A. W. Moon.
Westfield, Hamilton County	F. C. Test.
Indianapolis, Marion County	F. C. Test.
Hagerstown, Wayne County	F. C. Test.
Richmond, Wayne County	F. C. Test.
Dublin, Wayne County	Jerome McNeill.
Greencastle, Putnam County.....	O. P. Jenkins.
Terre Haute, Vigo County	W. S. Blatchley.
Connersville, Fayette County	Robert Hesler.
Brookville, Franklin County.....	A. W. Butler.
Bloomington, Monroe County	C. H. Bollman.
Lawrenceburgh, Dearborn County	D. M. Mottier.
Mitchell, Lawrence County	C. H. Bollman.
Salem, Washington County	C. H. Bollman.
New Providence, Clark County	C. H. Bollman.
Wyandotte, Crawford County.....	C. H. Bollman.
New Harmony, Posey County	R. D. Owen.

I desire to express my thanks to the following-named gentlemen, who have kindly collected specimens for me, thus enabling me to make this catalogue much more complete and satisfactory than would have been possible without their aid. As more species have been found about Bloomington I have given it, when mentioning the localities of the different species, precedence over the other places.

I do not mean to say that this list is complete, for I think the following additional species will some time be found within the limits of the State: *Parajulus canadensis*, *Parajulus diversifrons*, *Polydesmus pinetorum*, *Theatops spinicaudus*, *Henicops fulvicornis*, and *Lithobius mordax*.

* This catalogue is prepared partly from material in the U. S. National Museum collection, and the author has deposited types of the species in the Museum.—C. V. RILEY, *Curator of Insects*.

1. *Polyzonium rosalbum* (Cope).

Common: Bloomington; Terre Haute.

2. *Spirobolus americana-borealis* (Beauvois).

Common: Bloomington; Boswell; Kokomo; La Fayette; Terre Haute; Greencastle; Brookville; New Providence; Wyandotte; New Harmony.

3. *Parajulus venustus* (Wood).

Common; Kokomo; La Fayette; Westfield; Terre Haute; Greencastle; Salem; Brookville; New Harmony.

4. *Parajulus impressus* (Say).

Rare: Bloomington; Connersville; Brookville.

5. *Parajulus rugosus* (Bollman).

Rare: Terre Haute.

6. *Parajulus pennsylvanicus* (Brandt).

Common: Bloomington; Wyandotte; Brookville.

7. *Cambala annulata minor*, subsp. nov.Diagnosis: Similar to *C. annulata*, but much smaller and of a yellowish-brown shade.*Habitat*: Bloomington, Greencastle, Salem, New Providence, Wyandotte, and New Harmony, Ind.; Little Rock, Ark.*Types*: U. S. National Museum.

Nos. 1, 97, 109, collection Indiana University.

Nos. 24, 376, 440, author's collection.

Cambala annulata.

Author's collection.	Habitat.	Collector.	Length.	Width.
278	Chapel Hill, N. C.	G. F. Atkinson.....	mm.	mm.
225	Mossy Creek, Tennessee.....	C. B. Branner.....	58	3.1
229	do	do	45	3.
			40	2.5

Cambala annulata minor.

424	Bloomington, Ind.	C. H. Bollman.....	37	1.5
424	do	do	25.5	1.2
376	Wyandotte, Ind.	do	30	1.3
440	Little Rock, Ark.	W. J. Hutcherson.....	27.5	1.5
440	do	do	25	1.2

The above figures clearly show the difference in size between the two forms. The color of *C. annulata* is a dark brown, while that of *minor* is usually more yellow.

C. annulata minor is abundant in southern Indiana, and I have over twenty-five specimens from Little Rock.

The specimens Packard has recorded as occurring in Little Wyandotte Cave, Indiana, and Zwinger's and Carter's Caves, Kentucky, are probably examples of this new geographical subspecies, but they may be cave varieties.

8. *Julus hortensis* (Wood).

Common: Hagerstown; Indianapolis; Connersville; New Harmony.

9. *Julus virgatus* (Wood).

Common: Bloomington; Westfield; Connersville; Salem.

10. *Nemasoma stigmatosum* (Brandt).

Rare: Bloomington.

11. *Nemasoma minutum* (Brandt).

Common: Bloomington; Indianapolis; Salem; New Providence.

A careful examination of the above two species has shown that they should be put in the European genus—*Nemasoma* Koch.

12. *Callipus lactarius* (Say).

Abundant: Bloomington; La Fayette; Kokomo; Westfield; Terre Haute; Greencastle; Brookville; Salem; New Providence; Wyandotte.

13. *Campodes flavicornis* Koch.

Very common: Bloomington; La Fayette; Salem.

14. *Scotherpes lunatus* (Harger).

Common: Bloomington; Salem.

15. *Scotherpes wyandotte*, sp. nov.

Diagnosis: Related to *Sc. lunatum* (Harger), but the color dark, ocelli arranged in a triangular patch, and the body larger and more robust.

Habitat: Wyandotte, Indiana.

Type: U. S. National Museum.

Description: Body stout, short, scarcely depressed. Dorsal plates reticulated; lateral carinae as in *lunatum*. Ocelli 16-4, in a triangular patch. Yellowish-brown; legs pale. Length, 10^{mm}; width, 1.5^{mm}.

This new species is described from a female which was found a few miles north of Wyandotte Cave, Crawford County.

16. *Scotherpes bollmani* (McNeill).

Abundant: Mayfield's, Neeld's, Truett's and Coon's Caves, Bloomington; Phitt's and Donehue's Caves, Bedford, Ind.

17. *Pseudotremia cavernarum* (Cope).

Wyandotte, Little Wyandotte, Bradford and Marengo Caves, Crawford County, Ind.

18. *Pseudotremia carterensis* (Packard).

Around the mouth of a well at the foot of the path leading from the hotel, past Little Wyandotte Cave, I obtained five specimens of a *Craspedosoma* that seem to agree with the description of *Pseudotremia cavernarum carterensis* Packard from Bat, X, and Zwingler's Caves, Kentucky.

That this is a distinct species and not merely a variety of *C. cavernarum* is distinctly shown by the male copulation foot, the size and color of body, and its *habitat*.

My largest specimen—a male—is 30^{mm} long and 2.2^{mm} wide.

19. *Leptodesmus placidus* (Wood).

Mr. Mottier has sent me two specimens of this rare species from Boswell, Benton County.

20. *Fontaria virginiensis* (Drury).

Common: Bloomington; Boswell; Westfield; Terre Haute; Connersville; Brookville. This is the species described from Brookville by Mr. McNeill under the name of *Polydesmus butleri*.*

21. *Fontaria coriacea* Koch.

Polydesmus corrugatus Wood, Proceed. Acad. Nat. Sci. Phila., 6, 1864 (*Michigan, New York*).

Common: Bloomington; Boswell; Kokomo; Wyandotte.

A comparison of specimens of *corrugata* Wood with Koch's figures and descriptions of *coriacea* shows that they are the same. Koch's figures show a broad yellow band along the posterior margin of each segment. This is a character common to the eastern specimens, but rare in the western forms.

22. *Fontaria indianæ*, sp. nov.

Diagnosis: Related to *Fontaria coriacea* Koch, but the copulation foot expanded near the middle, end angularly bent inwards, basal spine *bifid*; lateral carinæ more rounded; legs of male stouter; segments always margined posteriorly with yellow.

Habitat: Hagerstown and Brookville.

Types: U. S. National Museum (Brookville and Hagerstown). No. 37, Museum Indiana University (Brookville). No. 519, author's collection (Brookville). No. 253, author's collection (Hagerstown).

Measurements of Fontaria indianæ.

	Habitat.	Collector.	Length.	Width.	Height.	Sex.
			<i>mm</i>	<i>mm</i>	<i>mm</i>	
No. 37, Museum Indiana University.	Brookville....	A. W. Butler.	34	9	5.5	♂
No. —, U. S. National Museum	do	do	38	8.5	6.5	♀
No. 519, author's collection	do	do	39	9	6	♀
No. —, U. S. National Museum	do	do	31	7.5	4.5	♀
No. 253, author's collection	Hagerstown ..	F. C. Test	38	8	6	♀

* *Polydesmus butleri* McNeill, Bull. Brook. Soc. Nat. Hist., No. 3, 6, 1888 (*Brookville, Ind.*).

This species is described from ten specimens, four females and three males, from Brookville, Franklin County, and three females from Hagers-town, Wayne County. It agrees with the eastern specimens of *coriacea* in having a broad yellow band along the posterior margin of each segment, but the shape of the male copulation foot, especially the *bifid* character of the basal spine, will serve to distinguish it from *coriacea*.

23. *Fontaria butleriana*, sp. nov.

Diagnosis: Related to *Fontaria coriacea* Koch, but the segments strongly attenuated posteriorly; size larger and width less in proportion to the length; dark greenish-black, with a narrow yellow line along the posterior border of each segment.

Habitat: La Fayette and Brookville.

Type: U. S. National Museum; No. 520, author's collection.

Measurements of Fontaria butleriana.

	Habitat.	Collector.	Length.	Width.
No. —, U. S. National Museum	La Fayette, Ind.	F. M. Webster.....	44	11
No. 520, author's collection.....	Brookville, Ind.	A. W. Butler.....	41	10

The above measurements, when compared with those of *Fontaria coriacea* clearly show the difference in size.

This species is described from two females—one from each locality.

It approaches very closely to Koch's figures of *F. virginiensis*, and it is probable that he has described this species as *virginensis*.

24. *Euryurus erythropygus* (Brandt).

Abundant: Bloomington; Boswell; La Fayette; Kokomo; Westfield; Terre Haute; Greencastle; Mitchell; Salem; New Providence; Brookville; Wyandotte.

25. *Scytonotus granulatus* (Say).

Abundant: Bloomington; La Fayette; Westfield; Greencastle; Salem; New Providence.

26. *Scytonotus cavernarum* Bollman.

Bloomington; Mayfield's Cave; only the original type known.

27. *Chaetaspis albus* Bollman.

Not common: Bloomington; Salem; New Providence.

28. *Polydesmus testi* Bollman.

Rare: Indianapolis.

29. *Polydesmus minor* Bollman.

Boswell. One specimen.

30. *Polydesmus serratus* Say.

Abundant throughout the State.

31. *Eurypauropus spinosus* Ryder.

Abundant: Bloomington.

32. *Pauropus lubbocki* Packard.

Rare: Bloomington.

33. *Linotsænia chionophila* (Wood).

Common: Bloomington; La Fayette.

34. *Linotsænia fulva* (Sager).

Common: Bloomington; Brookville; Salem.

35. *Linotsænia ruber* Bollman.

Common: Bloomington; Boswell; La Fayette; Westfield; Greencastle; Salem; Brookville; New Providence; Wyandotte.

36. *Geophilus brunneus* McNeill.

Common: Bloomington.

37. *Geophilus salemensis* Bollman.

Common: Salem; Wyandotte.

38. *Geophilus varians* McNeill.

Very common: Bloomington; Salem; New Providence.

39. *Geophilus umbraticus* (McNeill).

Common: Bloomington; Boswell; Salem.

40. *Geophilus indianæ* McNeill.

Rare: La Fayette (*McNeill*).

41. *Geophilus rubens* Say.

Common: Bloomington.

42. *Geophilus oweni* Bollman.

New Harmony. Two type specimens.

43. *Geophilus smithi* Bollman.

Bloomington: One specimen; length 36^{mm}.

44. *Geophilus setiger* Bollman.

Rare: Salem.

45. *Geophilus strigosus* (McNeill).

Rare: Bloomington; Salem.

46. *Geophilus foveatus* (McNeill).

Not common: Bloomington; Salem; Lawrenceburgh.

47. *Geophilus attenuatus* Say.

Common: Boswell; La Fayette; Kokomo; Westfield; Terre Haute; Brookville; Wyandotte.

48. *Scolopocryptops sexspinosus* (Say).

Very common throughout the State.

49. *Scolopocryptops nigridius* McNeill.

Common: Bloomington; Greencastle; Brookville; Salem.

50. *Cryptops hyalinus* Say.

Common; Bloomington; Salem; New Providence; Wyandotte.

51. *Theatops posticus* (Say).

Common: Bloomington; New Providence; Wyandotte.

52. *Scolopendra woodi* Meinert.

Bloomington. Two specimens.

53. *Lithobius proridens* Bollman.

Common: Bloomington; La Fayette; Richmond; Brookville; Salem; New Providence; Wyandotte.

54. *Lithobius jowensis* Meinert.

Very common: Bloomington; La Fayette; Richmond; Greencastle; Salem; New Providence; Wyandotte.

All the specimens I have examined differ from *jowensis* by having the first pair of legs armed with 2, 3, 2 or 2, 3, 1 spines instead of 2, 1, 1, as Meinert states; also, by having the inner spine of ♀ genitalia much shorter than the outer. These specimens may represent a geographical variety of *jowensis*, but until the *habitat* of *jowensis* and more specimens can be obtained it is not safe to describe them as such.

55. *Lithobius bilabiatus* Wood.

Lithobius tuber Bollman. Proceed. U. S. Nat. Mus., 256, 1887.

Rare: Bloomington.

56. *Lithobius trilobus* Bollman.

Not common: Bloomington; Salem.

57. *Lithobius pullus* Bollman.

Rare: Bloomington.

58. *Lithobius cardinalis* Bollman.

Common: Bloomington; Westfield; Salem; New Providence.

59. *Lithobius howei* Bollman.

Common: Bloomington; Kokomo; Dublin.

60. *Lithobius forficatus* (Linnaeus).

Common in northern part of State, but rare in the southern parts. Bloomington; Westfield; Connersville; Greencastle; Lawrenceburgh.

61. *Lithobius tyrannus* Bollman.

Common: Bloomington; La Fayette; Greencastle; Salem; New Providence.

62. *Lithobius juvenus* Bollman.

Rare: Bloomington. Four specimens.

63. *Lithobius multidentatus* Newport.

Abundant throughout the State.

64. *Scutigera forceps* (Rafinesque).

Bloomington; New Harmony; Evansville.

INDIANA UNIVERSITY,

Bloomington, December 25, 1888.

[From *Proc. U. S. Nat. Mus.*, Vol. XII, 1889, pp. 211-216.]

MYRIAPODA.

BY C. H. BOLLMAN.

1. *Spirobolus sanctæ-luciæ*, sp. nov.

Diagnosis.—Allied to *Spirobolus surinamensis* Bollman; but the horse-shoe-like markings only prominent along the middle line of segment; no deep sulcus behind repugnatorial pore; legs light yellow.

Type.—No. 590.

Habitat.—Port Castries, St. Lucia, Windward Islands.

Description.—Segments dark brown, posterior borders lighter; anterior margin of first pale; head and first dorsal plate greenish; antennæ pale brown; legs very light yellow (pale), probably red in life.

Rather slender, anterior segments attenuated.

Venter slightly reticulated, sulcus very indistinct; clypeus not deeply excised, foveolæ 2+2, distant, sulcus shallow.

Antennæ slenderer than in *surinamensis*, hardly reaching second segment.

Ocelli about 40, in a series, patch suboval.

Segments shining, rather smooth, especially posteriorly; anterior ten segments with distinct concentric striæ on basal part; posterior part, especially on anterior segments, sulcate beneath; division of segments not evident, a hollow depression along which are horseshoe-like depressions; these are scattered over the dorsal part of segments, but are small and shallow; the posterior four segments almost destitute of markings.

First segment narrowed laterally, anterior margin concave, a strong marginal sulcus.

Anal segment obtusely angled, not surpassing valves; anal valves narrowly margined, reticulated; anal scale very slightly rounded, almost transverse.

Repugnatorial pore large, situated in hollow on anterior part.

Legs extending slightly beyond sides of body.

Segments 50.

Length of body 45^{mm}; width 3.4^{mm}. This species is described from an adult female; in the same vial is a very young specimen, showing only 41 segments. In Karsch's "*Neue Juliden des Berliner Museum*" this species would stand near *Spirobolus biconicus* from Mauritius.

2. *Himantarium tæniopse* (Wood).

No. 599, Margarita Island, Lower California; ♀.

A young specimen. Pairs of legs, 148.

3. *Pectiniunguis americanus*, gen. et sp. nov.

Diagnosis.—Related to *Schendyla eximia* Meinert; but the anal pair of legs jointed and the claw of maxillary palpus pectinate along its entire under side.

Type.—No. 598.

Habitat.—Pichilingue Bay, Gulf of California.

Description.—Orange, darkest anteriorly; legs pale.

Robust, scarcely attenuated anteriorly, more posteriorly.

Segments not polished, very finely reticulate; sparsely pilose.

Prehensorial legs not reaching base of antennæ; sternum almost twice as wide as long, anterior margin slightly callous; coxæ of about equal length and width, unarmed, anterior margin not much sinuate.

Cephalic plate slightly longer than wide; basal plate three times as wide as long; pre-basal plate exposed. Antennæ filiform, rather long.

Dorsal plate manifestly bisulcate.

Spiracles suboval, longitudinal, anterior largest.

Ventral plates not sulcate; porous area suboval, much smaller on posterior segments; last ventral plate very wide, pilose, sides converging.

Posterior pleuræ large, pilose; pores large, concealed.

Anal pair of legs 6-jointed, moderately crassate, joints all large, densely pilose; unarmed.

Pairs of legs ♀ 65.

Length 50^{mm}; width 1.55^{mm}.

This species is described from an adult female.

According to Meinert's diagnosis of the genus *Schendyla* this species would be included under that genus; but the three known species may be separated by the following generic characters:

- a. Claw of maxillary palpus not pectinate, outer part of first pair of maxillæ without a trace of a lateral process; labrum entirely united, teeth 20-22, equal; anal legs 6-jointed *Nemorensis*.
- aa. Claw of maxillary palpus pectinate; outer part of first maxillæ with a small lateral process; labrum free in the middle.
 - b. Anal pair of legs 5-jointed; claw of maxillary palpus only pectinate under the apex; labral teeth about 15, equal; first joint of anal legs almost coalesce with second *Eximia*.
 - bb. Anal pair of legs 6-jointed; claw of maxillary palpus pectinate for its entire length; labral teeth 8+10+8, the outer enlarged; first joint of anal legs not coalesced with second *Americanus*.

On account of these generic differences between the three species, especially between the first and the last two, I have thought it best to place *americanus* and *eximia* under the new genus *Pectiniunguis*, of which *americanus* is the type, restricting *Schendyla* to *nemorensis*.

The generic differences between *americanus* and *eximia* are no doubt worthy of subgeneric rank, and I therefore propose the name *Nanopus* for the reception of *eximia*.

4. *Scolopendra macracanthus*, sp. nov.

Diagnosis.—Allied to *Scolopendra subspinipes* Leach; but the femora of anal legs armed beneath with three spines, of which the two anterior are very large, the superior interior surface armed with six spines; the first nine dorsal plates immarginate.

Type.—No. 165F.

Habitat.—Pacific coast, some place between Lower California and Straits of Magellan.

Description.—Brownish-green; tip of antennæ and lateral parts of dorsal plates green; head and first dorsal plate darker.

Rather slender, smooth, only lightly punctate anteriorly.

Head suborbicular, punctate, not sulcate.

Antennæ, 18-jointed; articles moderate, the first six not hirsute.

Prosternal teeth 5+5, the inner two small and coalesced; coxal tooth large, apex carinate, nodule present.

Dorsal plate, except the first nine (10), marginate; sulci beginning at the third and indistinct on the posterior; posterior border transversely wrinkled.

Sulci of ventral plates distinct; last ventral plate long and narrow, sides converging, posterior border rounded.

Second tarsal joint of all the legs, except anal, armed beneath with a spine.

Anal legs long, slender; femora, with six spines on the superior interior surface, arranged in three series; three beneath, uniseriate, the anterior two largest; apical process bifid.

Posterior pleuræ densely porose; angular process small, bifid.

Length 120^{mm}.

In the collection is a specimen without a more definite locality than "Pacific coast."

The following key will help to separate it from the related species:

Femora of penultimate pair of legs unarmed; first dorsal plate without a transverse furrow; tarsal joints armed.

a. Femora of anal legs unarmed beneath, two spines within; the first 6-11 dorsal plates immarginate; last two tarsal joints unarmed *DEHAANI*.

aa. Femora of anal legs armed beneath.

b. Spines of femora of anal legs 4-6, always two beneath; the first four or five dorsal plates immarginate; the last or the last two tarsi unarmed.

SUBSPINIPES.

bb. Spines of femora of anal legs 9, 3 beneath; the first nine dorsal plates immarginate; the last tarsal joint unarmed *MACROCANTHUS*.

5. *Scolopendra microcanthus*, sp. nov.

Diagnosis.—Allied to *Scolopendra pernix* Kohlrausch, but the anal pair of legs slender, spines small, and more numerous.

Type.—No. 600.

Habitat.—St. Margarita Island, Lower California.

Description.—Pale green, posterior border of segments dark; prehensorial legs orange.

Slender; smooth, very lightly punctate.

Head suboval, punctate; sulci absent.

Antennæ 25-29-jointed, long, basal not very crassate, the first 3 or 4 smooth.

Prosternal teeth 4+4, inner coalesced; coxal tooth large, inner margin unarmed.

The first 15 dorsal plates immarginate; sulci well developed, and commencing at transverse suture of first plate and dividing them into three planes.

Sulci of ventral plates shallow, last plate short and wide, sides converging, rounded, posterior margin emarginate.

Second tarsal joints of all legs, except anal, armed.

Anal pair of legs slender, as in *heros*; spines very small; 8-12, in 3 or 4 series on the superior-interior surface; 4 or 5 in 2 series on the inner surface; beneath 10-12 in 2 or 3 series; apical process large and blunt, armed with 9-11 small spines.

Posterior pleuræ narrow; apex long, armed with 7-9 spines, posterior margin concave; a marginal spine.

Length, 75^{mm}.

Described from one specimen of which the anal pair of legs is broken off.

This new species is separated from *heros*, *pachypus*, *nicaraguensis*, and *viridis* by the large number of spines of apical process of femora and the well-marked sulci of first dorsal plate.

6. *Scolopendra galapagoensis*, sp. nov.

Diagnosis.—Related to *Scolopendra viridicornis* Newport, but the spines of apical process of femora of anal legs, 6-8; spines of apex of posterior pleuræ, 9-12; spines of femora of 2-20 pairs of legs, 4 or 5.

Type.—No. 594.

Habitat.—Chatham, James, and Albemarle Islands, Galapagos Archipelago.

Description.—Very dark brown, more yellowish posteriorly; under parts more brown than upper; the first five or six antennal joints dark blue, rest rusty; tarsi brownish, rest of legs bluish brown, except base of femora, which is more brown, like ventral plates; posterior pleuræ and femora of anal legs reddish brown.

Robust, smooth, all parts very slightly punctate.

Head suboval; two longitudinal sulci, which break up posteriorly, and send a branch along lateral margin.

Antennæ long, 17-jointed, articles long, basal subcrassate, the first four or five not hirsute.

Prosternal teeth 3+3, large, inner coalesced; a transverse sulcus along anterior part of sternum.

The first four dorsal plates immarginate; posterior borders transversely wrinkled; crest of anal segment weak, only extending three-fourths of the way.

Sulci of ventral plates distinct; last plate rather short, narrow, posterior border rounded.

Second tarsal joint of all the legs, except anal pair, armed. Anal legs rather long and stout; 10-13 spines on the superior-interior surface of femora arranged in 3 series; within are 2 or 3 uniseriate spines; beneath 7-9 spines arranged in 2 or 3 series; apical process with 6-8 spines.

Femora of 2-20 pairs of legs armed with 4 or 5 spines at their exterior apex, the posterior usually with 5 spines; femora of penultimate pair of legs armed above with 1-3 spines.

Posterior pleuræ with 9-12 apical spines and 1 or 2 marginal; above on margin of dorsal plate are 2 small spines.

Length of largest specimen 160^{mm}.

This species is described from two adult and one young specimen from Chatham Island, one young individual from James Island, and another from Albemarle Island. The type is an adult from Chatham Island.

The five species belonging to this group of *Scolopendra* may be separated as follows:

Femora of penultimate pair of legs armed; first dorsal plate with a transverse sulcus.

a. Ventral plates not sulcate; tibiæ of anal legs armed with spines.....PRASINA.

aa. Ventral plates with two longitudinal sulci.

b. Last dorsal plate without a median carina.

c. Femora of last three pairs of legs armed; tibiæ of anal legs unarmed. VALIDA.

cc. Femora of all legs armed; tibiæ of anal legs armed.....GIGAS.

bb. Last dorsal plate with a median carina.

d. Femora of penultimate pair of legs not armed above; spines at apex of femora of 2-20 pairs of legs, 2 or 3; spines of apical process of anal legs, 1-3; spines of apex of anal pleuræ, 1-3.....VIRIDICORNIS.

dd. Femora of penultimate pairs of legs with 1-3 spines above; spines of apex of femora of 2-20 pairs of legs, 4 or 5; spines of apical process of femora of anal legs, 6-8; spines of apex of anal pleuræ, 9-12.

GALAPAGOENSIS.

7. *Scolopendra* sp. ?

No. 591, Abrolhos Islands, Brazil.

A very young specimen and unidentifiable.

8. *Henicops chilensis* Gervais.

Henicops chilensis Gervais. Aptères, iv, 239, 1847 (Chile).

No. 593, Port Charruca, Straits of Magellan.

One young mutilated female.

Prosternal teeth, 4+4.

IV.

A CATALOGUE OF THE KNOWN MYRIAPODA OF NORTH AMERICA, NORTH OF MEXICO.*

BY CHARLES HARVEY BOLLMAN.

In examining the literature relating to the North American Myriapoda, I have found descriptions of a large number of species which do not seem to be known to specialists working in this branch. On account of these and the number of species recently described I have deemed it best to form a catalogue, believing it would be the best means of bringing these facts before students. I have used the same divisions as used by Packard in the Third Report of the U. S. Entomological Commission.

Order DIPLOPODA.

Suborder COLOBOGNATHA.

Family POLYZONIDÆ.

I. POLYZONIUM Brandt.

1. *P. rosalbum* (Cope).

Petaserpes rosabus Cope. Trans. Amer. Entom. Soc., III, 65 (1870).

Hexaglena cryptocephala McNeill. Proc. U. S. Nat. Mus., x, 328 (1887).—E.

II. OCTOGLENA Wood.

1. *O. bivirgata* Wood. Proc. Phila. Acad., 1864, 186; Trans. Amer. Philos. Soc. XIII, 229 (1865). Georgia.

III. PLATYDESMUS Lucas.

1. *P. lecontei* (Wood).

Brachycybe lecontei Wood. Proc. Phila. Acad. 1864, 187; Trans. Amer. Philos. Soc., XIII, 230 (1865).—Georgia, Tennessee.

2. *P. roseus* (Murray).

Brachycybe rosea Murray. Economic Entomology, I, Aptera, 21 (1877).

Platydesmus californicus Karsch. Mitth. Münch. Ent. Ver., IV, 144 (1881). California.

* In Mr. Bollman's MSS., sent me for examination after his death, there appeared this paper. In its original form the references to literature were given in footnotes, which made up fully half the paper. There were no references to species described in Wood's *Myriapoda of North America* (1865), and no synonyms were given. These have been added, together with additional species from his latest published papers, and the footnotes have been uniformly incorporated into the text, believing that this form will be most convenient for reference. In the geographic distribution NE. refers to the Atlantic Province, northern part; SE. to the Atlantic Province, southern part; and P. to the Pacific Province.—L. M. UNDERWOOD.

IV. **ANDROGNATHUS** Cope.

1. *A. corticarius* Cope. Proc. Amer. Philos. Soc., XI, 182 (1869). Virginia.

Suborder **CHILOGNATHA**.Family **JULIDÆ**.I. **JULUS** Linn.

1. *J. canaliculatus* Wood. Proc. Phila. Acad. 1864, 12; Trans. Amer. Philos. Soc., XIII, 201 (1865).—NE.
2. *J. cinerefrons* Wood. Proc. Phila. Acad. 1864, 13; Trans. Amer. Philos. Soc., XIII, 203 (1865).—Oregon.
3. *J. cœruleocinctus* Wood. Proc. Phila. Acad. 1864, 14; Trans. Amer. Philos. Soc., XIII, 204 (1865). *J. multistriatus* Walsh. Pract. Entom. 34 (1866).—NE.
4. *J. exiguus* Brandt. Recueil, 85 (1841); Wood. Trans. Amer. Philos. Soc., XIII, 199 (1865).—NE.
5. *J. hortensis* Wood. Proc. Phila. Acad., 1864, 14; Trans. Amer. Philos. Soc., XIII, 205 (1865).—NE.
6. *J. laqueatus* Wood. Proc. Phila. Acad., 1864, 13; Trans. Amer. Philos. Soc., XIII, 202 (1865).—NE.
7. *J. milesii* Wood. Proc. Phila. Acad., 1864, 13; Trans. Amer. Philos. Soc., XIII, 203 (1865).—NE.
8. *J. owenii* Bollman. Entom. Amer., II, 228 (1887); Ann. N. Y. Acad. Sci., IV, 25 (1887).—Indiana.
9. *J. virgatus* Wood. Proc. Phila. Acad., 1864, 14; Trans. Amer. Philos. Soc., XIII, 205 (1865).—NE.

II. **NEMASOMA** Koch.

1. *N. minutum* (Brandt).
Julus minutus Brandt. Recueil, 89 (1841); Wood. Trans. Amer. Philos. Soc. XIII, 206 (1865).
J. pusillus Say. Jour. Phila. Acad., II, 105 (1821).
J. lineatus McNeill. Proc. U. S. Nat. Mus., X, 324 (1887).—E.
2. *N. stigmatosum* (Brandt).
Julus stigmatosus Brandt. Recueil, 88 (1841); Wood. Trans. Amer. Philos. Soc., XIII, 206 (1865).
J. punctatus Say. Journ. Phila. Acad., II, 102 (1821).—E.

III. **SPIROSTREPTUS** Brandt.

1. *S. clavipes* Koch. Syst. der Myriap., 105 (1847); Die Myriapoden, II, 103, t. cxv, f. 226 (1863).—Pennsylvania.
2. *S. montezumæ* (Sauss.).
Julus montezumæ Sauss. Linnæa Entomologica, XIII, 330 (1859).
Spirostreptus montezumæ Humb. et Sauss. Études sur les Myriap., 69 (1872).—Texas.
3. *S. multiannulatus* (McNeill).
Julus multiannulatus McNeill. Proc. U. S. Nat. Mus., X, 331 (1887).—Iowa.
4. *S. nutans* Koch. Syst. der Myriap., 104 (1847); Die Myriapoden, I, 14, t. VII, f. 14 (1863).—"North America."

IV. **SPIROBOLUS** Brandt.

1. *S. agilis* Cope. Proc. Amer. Philos. Soc., XI, 181 (1869).—Virginia.
2. *S. angusticeps* Wood. Proc. Phila. Acad., 1864, 16; Trans. Amer. Philos. Soc., XIII, 181 (1865).—California.

3. *S. atratus* (Girard).*

Julus atratus Girard. Rep. Marcy's Red River Exped., 245 (1853).—SE.

4. *S. californicus* Humbert et Saussure. Rev. et Magas. Zool., 1870, 177.—California.5. *S. ignobilis* Humbert et Saussure. Rev. et Magas. Zool., 1870, 177.—"North America."6. *S. marginatus* (Say).

Julus marginatus Say. Jour. Phila. Acad., II, 105 (1821).

Spirobolus marginatus Wood. Trans. Amer. Philos. Soc., XIII, 207 (1865).—E.

7. *S. ornatus* (Girard).*

Julus ornatus Girard. Rep. Marcy's Red River Exped., 245 (1853).—SE.

8. *S. pensacolæ* Bollman. Entom. Amer., II, 227 (1887).—Florida.9. *S. spinigerus* Wood. Proc. Phila. Acad., 1864, 16; Trans. Amer. Philos. Soc., XIII, 211 (1865).—SE.10. *S. unciigerus* Wood. Proc. Phila. Acad., 1864, 15; Trans. Amer. Philos. Soc., XII, 209 (1865).—California.11. *S. woodi* Humbert et Saussure. Rev. et Magas. Zool., 1870, 177.—Missouri.V. *PÆROMOPUS* Karsch.1. *P. lysiopetalinus* Karsch. Zeits. f. d. gesamt. Naturwiss., LIV, 12 (1881).—California.VI. *PARAJULUS* Humb. et Sauss.1. *P. cæsius* (Wood).

Julus cæsius Wood. Proc. Phila. Acad., 1867, 43.—Texas.

2. *P. canadensis* (Newport).

Julus canadensis Newport. Ann. and Mag. Nat. Hist., XIII, 268 (1844); Wood, Trans. Amer. Philos. Soc., XIII, 200 (1865).—NE.

3. *P. castaneus* Bollman. Entom. Amer., II, 226 (1887); Ann. N. Y. Acad. Sci., IV, 35 (1887).—Minnesota.4. *P. diversifrons* (Wood).

Julus diversifrons Wood. Proc. Phila. Acad., 1864, 13; Trans. Amer. Philos. Soc., XIII, 203 (1865).—NE.

5. *P. ellipticus* (Bollman).

Julus ellipticus Bollman. Amer. Nat., XXI, 82 (1887).

Parajulus ellipticus Bollman. Ann. N. Y. Acad. Sci., IV, 35 (1887).—Minnesota.

6. *P. furcifer* (Harger).

Julus furcifer Harger. Amer. Jour. Sci., 3d ser. IV, 120 (1872).—Oregon.

7. *P. immaculatus* (Wood).

Julus immaculatus Wood. Proc. Phila. Acad., 1864, 12; Trans. Amer. Philos. Soc., XIII, 200 (1865).—New York.

8. *P. impressus* (Say).

Julus impressus Say. Jour. Phila. Acad., II, 102 (1821); Wood, Trans. Amer. Philos. Soc., XIII, 196 (1865).—NE.

9. *P. obtectus* Bollman. Entom. Amer., II, 227 (1887); Ann. N. Y. Acad. Sci., IV, 38 (1887).—E.10. *P. oregonensis* (Wood).

Julus oregonensis Wood. Proc. Phila. Acad., 1864, 11; Trans. Amer. Philos. Soc., XIII, 199 (1865).—P.

11. *P. pennsylvanicus* (Brandt).

Julus pennsylvanicus Brandt. Recueil, 85 (1841); Wood, Trans. Amer. Philos. Soc., XIII, 201 (1865).

J. montanus Cope. Proc. Amer. Philos. Soc., XI, 181 (1869).—NE.

* These two species were referred by Wood to *S. marginatus*. [U.]

12. *P. pilosiscutus* (Wood).

Julus pilosiscuta Wood. Proc. Phila. Acad., 1864, 11; Trans. Amer. Philos. Soc., XIII, 198 (1865).—Pennsylvania.

13. *P. varius* Bollman. Entom. Amer., II, 227 (1887); Ann. N. Y. Acad. Sci., IV, 38 (1887).—California.VII. *NANNOLENE* Bollman.1. *N. burkei* Bollman. Entom. Amer., II, 225 (1887); Ann. N. Y. Acad. Sci., IV, 40 (1887).

Julus burkei Bollman. Amer. Nat., XXI, 82 (1887).—California.

VIII. *CAMBALA* Gray.1. *C. annulata* (Say).

Julus annulatus Say. Jour. Phila. Acad., II, 103 (1821).

Spirobolus annulatus Wood. Trans. Amer. Philos. Soc., XIII, 212 (1865).

Cambala annulata Cope. Proc. Amer. Philos. Soc., XI, 181 (1869).—NE.

Family *LYSIOPETALIDÆ*.I. *LYSIOPETALUM* Brandt.1. *L. costatum* Karsch. Mitth. Münch. Ent. Ver., IV, 144 (1880).—"North America."2. *L. lactarium* (Say).*

Julus lactarius Say. Jour. Phila. Acad., II, 104 (1821).

Spirostrephon lactarius Wood. Trans. Amer. Philos. Soc., XIII, 192 (1865).

Reasia spinosa Sager. Proc. Phila. Acad., 1856, 109.

Lysiopetalum lactarium Packard. Amer. Nat., XVII, 555 (1883); Proc. Amer. Philos. Soc., XXI, 184 (1883).

L. eudasum McNeill. Proc. U. S. Nat. Mus., X, 330 (1887).—E.

3. *L. setigerum* Karsch. Mitth. Münch. Ent. Ver., IV, 144 (1880).—"North America."Family *CRASPEDOSOMIDÆ*.I. *CAMPODES* Koch.1. *C. flavicornis* Koch. Syst. d. Myriap., 126 (1847); Die Myriapoden, II, 17, t. LXVIII, f. 140 (1863).

C. fuscicornis Koch. Syst. d. Myriap., 127 (1847); Die Myriapoden, II, 16, t. LXVIII, f. 139 (1863).

Spirostrephon cersioannulatus Wood. Trans. Amer. Philos. Soc., XIII, 194 (1865).

Pseudotremia rudii Cope. Proc. Amer. Philos. Soc., XI, 180 (1869).

Cryptotrichus cersioannulatus Packard. Proc. Amer. Philos. Soc., XXI, 192 (1883).—SE.

II. *CRASPEDOSOMA* Leach-Rawlins.1. *C. atrolineatum* Bollman. Proc. U. S. Nat. Mus., X, 618 (1887).—British Columbia.2. *C. carinatum* Bollman. Ann. N. Y. Acad. Sci. (1888), 109.—Tennessee.3. *C. flavidum* Bollman. Entom. Amer., IV, 2 (1888).—Arkansas.4. *C. glomeratum* (Harger).

Trichopetalum glomeratum Harger. Amer. Jour. Sci., 3rd series IV, 118 (1872).—Oregon.

5. *C. ocellatum* (Packard).

Polydesmus ocellatus Packard. Amer. Nat., XVII, 428 (1883).

Craspedosoma packardii Stuxburg. Amer. Nat., XIX, 400 (1885).—Oregon.

* In one of Bollman's latest papers this is referred to *Callipus lactarius*. As the genus *Callipus* Risso is not certainly a synonym of *Lysiopetalum*, it is best to leave it in the latter genus [U.].

III. **CHORDEUMA** Koch.1. **C. fuloides** (Harger).

Trichopetalum fuloides Harger. Amer. Jour. Sci., 3d ser. iv, 118 (1872).—Lake Superior district.

IV. **PSEUDOTREMIA** Cope.1. **P. cavernarum** Cope. Proc. Amer. Philos. Soc., xi, 179 (1869).

Spirostrephon cavernarum Cope. Amer. Nat., vi, 414 (1872).—E.

2. **P. carterensis** (Packard).

P. cavernarum, var. *carterensis* Packard. Proc. Amer. Philos. Soc., xxi, 188 (1883).—Indiana, Kentucky.

V. **SCOTERPES** Cope.1. **S. bollmani** (McNeill).

Trichopetalum bollmani McNeill. Proc. U. S. Nat. Mus., x, 330 (1887).—Indiana.

2. **S. copei** (Packard).

Spirostrephon copei Packard. Amer. Nat., x, 748 (1871).

Scoterpes copei Packard. Amer. Nat., xi, 414 (1872).—Kentucky.

3. **S. lunatus** Harger.

Trichopetalum lunatum Harger. Amer. Jour. Sci., 3d ser. iv, 118 (1872).—NE.

4. **S. whitei** (Ryder).

Zygonopus whitei Ryder. Proc. U. S. Nat. Mus., iii, 527 (1880).

Spirostrephon copei Packard. Amer. Nat., xv, 231 (1881).—Virginia.

5. **S. wyandotte** Bollman. Proc. U. S. Nat. Mus., xi, 405 (1888).—Indiana.VI. **STRIARIA** Bollman.1. **S. granulosa** Bollman. Ann. N. Y. Acad. Science, 1888, 108.—Tennessee.Family **POLYDESMIDÆ**.I. **POLYDESMUS** Latr.1. **P. Branneri** Bollman. Proc. U. S. Nat. Mus., x, 620 (1887).—Tennessee.2. **P. caviicola** Packard. Bull. U. S. Geol. Survey (Hayden), iii, 161 (1887).—Colorado.3. **P. cerasinus** Wood. Proc. Phila. Acad., 1864, 6; Trans. Amer. Philos. Soc., xiii, 217 (1865).—Oregon.4. **P. minor** Bollman. Entom. Amer., iv, 2 (1888).—Arkansas.5. **P. monillaris** Koch. Syst. d. Myriap., 135 (1847); Die Myriapoden, ii, 20, t. LXIX, f. 143 (1863).

P. serratus Wood. Trans. Amer. Philos. Soc., xiii, 215 (1865), not of Say.—E.

6. **P. nitidus** Bollman. Entom. Amer., iii, 45 (1887).—Florida.7. **P. pinetorum** Bollman. Entom. Amer., iv, 3 (1888).—Arkansas.8. **P. serratus** Say. Jour. Phila. Acad., ii, 106 (1821).

P. canadensis Newport. Ann. and Mag. Nat. Hist., xiii, 265; Wood, Trans. Amer. Philos. Soc., xiii, 216 (1865).

P. pennsylvanicus Koch. Syst. d. Myriap., 133 (1847); Die Myriapoden, ii, 18, t. LXIX, f. 142 (1863).

P. glaucescens Koch. Syst. d. Myriap., 133 (1847); Die Myriapoden, i, 59, t. xxvi, f. 56 (1863).—E.

9. **P. testi** Bollman. Proc. U. S. Nat. Mus., x, 619 (1887).—Indiana.

* The generic position of this species is uncertain [U.].

II. **STRONGYLOSOMA** Braudt.1. **S. eruca** (Wood).

Polydesmus eruca Wood. Proc. Phila. Acad., 1864, 8; Trans. Amer. Philos. Soc., XIII, 227 (1865).—Oregon.

III. **LEPTODESMUS** Saussure.*1. **L. armatus** (Harger).

Polydesmus armatus Harger. Amer. Jour. Science, 3d ser., IV, 118 (1872).—Oregon.

2. **L. haydenianus** (Wood).

Polydesmus haydenianus Wood. Proc. Phila. Acad., 1864, 10; Trans. Amer. Philos. Soc., XIII, 226 (1865).—P.

3. **L. hispidipes** (Wood).

Polydesmus hispidipes Wood. Proc. Philos. Acad., 1864, 7; Trans. Amer. Philos. Soc., XIII, 220 (1865).—Illinois.

4. **L. impurus** (Wood).

Polydesmus impurus Wood. Proc. Phila. Acad., 1867, 43.—Texas.

5. **L. intaminatus** (Karsch).

Polydesmus (Oxyurus) intaminatus Karsch. Archiv f. Naturgeschichte, 1881, 41.—California.

6. **L. placidus** (Wood).

Polydesmus placidus Wood. Proc. Phila. Acad., 1864, 9; Trans. Amer. Philos. Soc., XIII, 225 (1865).

P. floridanus (var. †) Wood. Proc. Phila. Acad., 1864, 9; Trans. Amer. Philos. Soc., XIII, 226 (1865).—Michigan.

7. **L. varius** (McNeill).

Polydesmus varius McNeill. Proc. U. S. Nat. Mus., x, 323 (1887).—Florida.

8. **L. vermiformis** (Saussure).†

Polydesmus (Strongylosoma) vermiformis Sauss. Linnaea Entomologica, XIII, 326 (1859).—Texas.

IV. **SCYTONOTUS** Koch.1. **S. cavernarum** Bollman Entom. Amer., III, 46 (1887).—Indiana.2. **S. granulatus** (Say).

Polydesmus granulatus Say. Jour. Phila. Acad., II, 107 (1821); Wood, Trans. Amer. Philos. Soc., XIII, 214 (1865).

S. laricollis Koch. Syst. d. Myriap., 131 (1847); Die Myriapoden, II, 41, t. LXXX, f. 163 (1863).

S. scabricollis Koch. Syst. d. Myriap., 130 (1847); Die Myriapoden, II, 41, t. LXXX, f. 154 (1863).—NE.

3. **S. nodulosus** Koch. Syst. d. Myriap., 131 (1847); Die Myriapoden, II, 43, t. LXXX, f. 165 (1863).

Polydesmus setiger Wood. Trans. Amer. Philos. Soc., XIII, 213 (1865).

Stenonia hispida Suger. Proc. Phila. Acad., 1856, 109.—NE.

V. **CHÆTASPIIS** Bollman.1. **C. albus** Bollman. Entom. Amer., III, 46 (1887).—Indiana.VI. **PARADESMUS** Saussure.1. **P. dasys** Bollman. Proc. U. S. Nat. Mus., x, 619 (1887).—Maryland.

* *Oxyurus* Koch, but this name is preoccupied by *Oxyurus* Raf. (Pisces), 1810, and *Oxyurus* Swains. (Aves), 1827.

†Reported from Dallas, Texas, by Karsch.

VII. EURYURUS Koch.

1. *E. erythropygus* Brandt. Recueil, 134 (1841).
Polydesmus erythropygus Wood. Trans. Amer. Philos. Soc., XIII, 218 (1865).
Polydesmus (Paradesmus) carolinensis Saussure. Linnaea Entomologica, XIII, 325 (1859).
E. maculatus Koch. Syst. d. Myriap., 138 (1847); Die Myriapoden, I, 7, t. III, f. 8 (1863).—E.
2. *E. evides* (Bollman).
Paradesmus evides Bollman. Entom. Amer., II, 229 (1887).
E. evides Bollman. Entom. Amer., IV, 2 (1888).—Minnesota.

VIII. FONTARIA Gray.

1. *F. bifida* (Wood).
Polydesmus bifidus Wood. Proc. Phila. Acad., 1864, 7; Trans. Amer. Philos. Soc., XIII, 223 (1865).—SE.
2. *F. bimaculata* (McNeill).
Polydesmus bimaculatus McNeill. Proc. U. S. Nat. Mus., x, 323 (1887).—Florida.
3. *F. butleriana* Bollman. Proc. U. S. Nat. Mus., XI, 407 (1888).—Indiana.
4. *F. castanea* (McNeill).
Polydesmus castaneus McNeill. Proc. U. S. Nat. Mus., x, 329 (1887).—Indiana.
5. *F. coriacea* Koch. Syst. d. Myriap., 141 (1847); Die Myriapoden, I, 72, t. XXXII, f. 63 (1863).
Polydesmus corrugatus Wood. Proc. Phila. Acad., 1864, 6; Trans. Amer. Philos. Soc., XIII, 222 (1865).—NE.
6. *F. crassicutis* (Wood).
Polydesmus crassicutis Wood. Proc. Phila. Acad., 1864, 7; Trans. Amer. Philos. Soc., XIII, 224 (1865).—Mississippi.
7. *F. dissecta* (Wood).
Polydesmus dissectus Wood. Proc. Phila. Acad., 1867, 129.—California.
8. *F. evides* Bollman. Proc. U. S. Nat. Mus., x, 621 (1887).—Tennessee.
9. *F. furcifer* (Karsch).
Polydesmus (Fontaria) furcifer Karsch. Archiv f. Naturgeschichte, 1884, 39.—California.
10. *F. georgiana* Bollman. Proc. U. S. Nat. Mus., XI, 344 (1888).—Georgia, Tennessee.
11. *F. indianæ* Bollman. Proc. U. S. Mus., XI, 406 (1888).—Indiana.
12. *F. montana* Bollman. Proc. U. S. Nat. Mus., x, 622 (1887).—Tennessee.
13. *F. oblonga* Koch. Syst. d. Myriap., 142 (1847); Die Myriapoden, I, 73, t. XXXII, f. 64 (1863).—Pennsylvania.
14. *F. pulchella* Bollman. Proc. U. S. Nat. Mus., XI, 316 (1888).—Tennessee.
15. *F. rileyi* Bollman. Proc. U. S. Nat. Mus., XI, 345 (1888).—Georgia.
16. *F. rubromarginata* Bollman. Proc. U. S. Nat. Mus., x, 622 (1887).—North Carolina.
17. *F. tallulah* Bollman. Proc. U. S. Nat. Mus., XI, 344 (1888).—Georgia.
18. *F. tennesseensis* Bollman. Proc. U. S. Nat. Mus., XI, 340 (1888).—Tennessee.
19. *F. trimaculata* (Wood).
Polydesmus trimaculatus Wood. Proc. Phila. Acad. 6 1864, 6; Trans. Amer. Philos. Soc., XIII, 223 (1865).—NE.
20. *F. virginiensis* (Drury).
Julus virginensis Drury. Ins. Exot., I, t. XLIII, f. 8 (1770).
Polydesmus virginensis Pal. Beauv. Ins. Afr. et Amér. Aptères, pl. IV, fig. 5 (1805); Wood, Trans. Amer. Philos. Soc., XIII, 221 (1865).
Polydesmus butleri McNeill. Bull. Brookville Soc. Nat. Hist., No. 3, 6 (1888).
Fontaria virginensis Gray, in Griffith's Animal Kingd. Ins., I, t. 135, fig. 1 (1832).—NE.

IX. SPHÆRIODESMUS Peters.

1. **S. pudicus** Bollman. Entom. Amer., IV, 3 (1888).—Arkansas.

Incertæ sedis.

Polydesmus leachii Gray, in Griffith's Animal Kingd., pl. cxxxv, 3 (no description).—"North America."

Polydesmus tridentatus (Fabr.).

Julus tridentatus Fabr. Spec. Ins., I, 350.

Polydesmus tridentatus Latreille, in Cuvier, Règne Animal, IV, 335; Gerstaecker, Aptères, IV, 105.—"North America."

Suborder PSELAPHOGNATHA.

Family POLYXENIDÆ.

I. POLYXENUS Latr.

1. **P. fasciculatus** Say. Jour. Phila. Acad., II, 108 (1821); Wood, Trans. Amer. Philos. Soc., XIII, 228 (1865).—E.

Order PAUROPODA.

Family PAUROPODIDÆ.

I. PAUROPUS Lubbock.

1. **P. huxleyi** Lubbock. Trans. Linn. Soc. Lond., XXXVI, 182 (1867); Ryder, Amer. Nat., XII, 557 (1878); XIII, 611 (1879).—NE.
2. **P. lubbockii** Packard. Proc. Boston Soc. N. H., XIII, 409 (1870); Amer. Nat., IV, 621 (1870); Ryder, Amer. Nat., XIII, 611 (1879).—NE.

Family EURYPAUROPODIDÆ.

I. EURYPAUROPUS Ryder.

1. **E. spinosus** Ryder. Proc. Phila. Acad., 1879, 139, 164; Amer. Nat., XIII, 603 seq. (1879).—NE.

Order CHILOPODA.

Family GEOPHILIDÆ.

I. GEOPHIUS Leach.

1. **G. attenuatus** Say. Jour. Phila. Acad., II, 114 (1821).—SE.
2. **G. bipuncticeps** Wood. Jour. Phila. Acad., V, 45 (1862); Trans. Amer. Philos. Soc., XIII, 180 (1865).—Illinois.
3. **G. brevicornis** Wood. Jour. Phila. Acad., V, 45 (1862); Trans. Amer. Philos. Soc., XIII, 179 (1865).—Illinois, Texas.
4. **G. brunneus** McNeill. Proc. U. S. Nat. Mus., X, 331 (1867).—Indiana.
5. **G. californiensis** Bollman. Proc. U. S. Nat. Mus., X, 624 (1887).—California.
6. **G. foveatus** (McNeill).
Mecistocephalus foveatus McNeill. Proc. U. S. Nat. Mus., X, 333 (1857).—Indiana.
7. **G. georgianus** Meinert. Proc. Amer. Philos. Soc., XXI, 219 (1885).—Georgia.
8. **G. glaber** Bollman. Entom. Amer., II, 229 (1887).—California.

9. *G. huronicus* Meinert. Proc. Amer. Philos. Soc., xxi, 220 (1885).—Massachusetts.
10. *G. indianæ* McNeill. Proc. U. S. Nat. Mus., x, 331 (1887).—Indiana.
11. *G. latro* Meinert. Myr. Musæi Haun. i, 79 (1871).—Louisiana.
12. *G. marginalis* Meinert. Proc. Amer. Philos. Soc., xxi, 218 (1885).—Florida.
13. *G. mordax* Meinert. Proc. Amer. Philos. Soc., xxi, 217 (1885).—"United States."
14. *G. occidentalis* Meinert. Proc. Amer. Philos. Soc., xxi, 220 (1885).—California.
15. *G. okolonæ* Bollman. Entom. Amer., iv, 5 (1888).—Arkansas.
16. *G. oweni* Bollman. Proc. U. S. Nat. Mus., x, 623 (1887).—Indiana.
17. *G. perforatus* (McNeill).
Schendyla ? perforata McNeill. Proc. U. S. Nat. Mus., x, 325 (1887).—Florida.
18. *G. rubens* Say. Jour. Phila. Acad., ii, 21 (1821).
G. cephalicus Wood. Jour. Phila. Acad., v, 44 (1862).
G. lævis Wood. Jour. Phila. Acad., v, 44 (1862).
Strigamia rubens Wood. Trans. Amer. Philos. Soc., xiii, 182 (1865).—EP.
19. *G. salemensis* Bollman. Entom. Amer., iii, 82 (1887).—Indiana.
20. *G. setiger* Bollman. Entom. Amer., iii, 82 (1887).—Indiana.
21. *G. smithi* Bollman. Proc. U. S. Nat. Mus., xi, 347 (1888).—Washington, D. C.
22. *G. strigosus* (McNeill).
Mecistocephalus strigosus McNeill. Proc. U. S. Nat. Mus., x, 332 (1887).—Indiana.
23. *G. umbraticus* (McNeill).
Mecistocephalus umbraticus McNeill. Proc. U. S. Nat. Mus., x, 332 (1887).—E.
24. *G. urbicus* Meinert. Proc. Amer. Philos. Soc., xxi, 218 (1885).
G. gracilis Harger.* Amer. Jour. Science, 3d series, iv, 117 (1872).—NE.
25. *G. varians* McNeill. Proc. U. S. Nat. Mus., x, 332 (1887).—Indiana.
26. *G. virginiensis* Bollman. Proc. U. S. Nat. Mus., xi, 346 (1888).—Virginia.

II. MECISTOCEPHALUS Newport.

1. *M. breviceps* Meinert. Proc. Amer. Philos. Soc., xxi, 214 (1885).—Massachusetts.
2. *M. fulvus* Wood. Jour. Phila. Acad., v, 41 (1862); Trans. Amer. Philos. Soc., xiii, 176 (1865).—Pennsylvania.
3. *M. limatus* Wood. Jour. Phila. Acad., v, 41 (1862); Trans. Amer. Philos. Soc., xiii, 177 (1865).—California.
4. *M. melanotus* Wood. Jour. Phila. Acad., v, 41 (1862); Trans. Amer. Philos. Soc., xiii, 177 (1865).
5. *M. quadratus* Wood. Proc. Phila. Acad., 1867, 182.—California.

III. HIMANTARIUM Koch.

1. *H. cephalicum* (Wood).
Strigamia cephalica Wood. Jour. Phila. Acad., v, 46 (1862); Trans. Amer. Philos. Soc., xiii, 187 (1865).—California.
2. *H. gracile* (Wood).
Strigamia gracilis Wood. Proc. Phila. Acad., 1867, 128.—California.
3. *H. inerme* (Wood).
Strigamia inermis Wood. Proc. Phila. Acad., 1867, 129.—California.
4. *H. laticeps* (Wood).
Strigamia laticeps Wood. Jour. Phila. Acad., v, 49 (1862); Trans. Amer. Philos. Soc., xiii, 186 (1865).—Texas.
5. *H. tæniopse* (Wood).
Strigamia tæniopsis Wood. Jour. Phila. Acad., v, 48 (1862); Trans. Amer. Philos. Soc., xiii, 185 (1865).—Georgia.

* This yields to an earlier *G. gracilis* Meinert (1871).

IV. *LINOTÆNIA* Koch.*

1. *L. bidens* (Wood).
Strigamia bidens Wood. Jour. Phila. Acad., v, 47 (1862); Trans. Amer. Philos. Soc., XIII, 183 (1865).—Pennsylvania.
2. *L. branneri* Bollman. Entom. Amer., iv, 4 (1888).—Arkansas.
3. *L. chionophila* (Wood).
Strigamia chionophila Wood. Jour. Phila. Acad., v, 50 (1862); Trans. Amer. Philos. Soc., XIII, 189 (1865).
Scolioplanes chionophilus Meinert. Proc. Amer. Philos. Soc., XXI, 223 (1885).—Minnesota.
4. *L. epileptica* (Wood).
Strigamia epileptica Wood. Jour. Phila. Acad., v, 49 (1862); Trans. Amer. Philos. Soc., XIII, 188 (1865).—Oregon.
5. *L. fulva* (Sager).
Strigamia fulva Sager. Proc. Phila. Acad., 1856, 109.
S. bothriopus Wood. Jour. Phila. Acad., v, 47 (1862); Trans. Amer. Philos. Soc., XIII, 183 (1865).
Scolioplanes bothriopus Meinert. Proc. Amer. Philos. Soc., XXI, 222 (1885).—E.
6. *L. gracilis* (Bollman).
Scolioplanes gracilis Bollman. Ann. N. Y. Acad. Science, 1888, 110.—Tennessee.
7. *L. lævipes* (Wood).
Strigamia lævipes Wood. Jour. Phila. Acad., v, 48 (1862); Trans. Amer. Philos. Soc., XIII, 184 (1865).—P.
8. *L. maculaticeps* (Wood).
Strigamia maculaticeps Wood. Jour. Phila. Acad., v, 48 (1862); Trans. Amer. Philos. Soc., XIII, 186 (1865).—Texas.
9. *L. parviceps* (Wood).
Strigamia parviceps Wood. Jour. Phila. Acad., v, 49 (1862); Trans. Amer. Philos. Soc., XIII, 187 (1865).
Scolioplanes parviceps Meinert. Proc. Amer. Philos. Soc., XXI, 225 (1885). California.
10. *L. robusta* (Meinert).
Scolioplanes robustus Meinert. Proc. Amer. Philos. Soc., XXI, 224 (1885).—"North America."
11. *L. ruber* (Bollman).
Scolioplanes ruber Bollman. Amer. Nat., XXI, 81 (1887).—Indiana.
12. *L. walkeri* (Wood).
Strigamia walkeri Wood. Trans. Amer. Philos. Soc., XIII, 184 (1865).—Pennsylvania.
13. *L. whitei* (Newport).
Geophilus whitei Newport. Trans. Linn. Soc., XIX, 436 (1845).
Strigamia whitei Wood. Trans. Amer. Philos. Soc., XIII, 184 (1865).—NE.

V. *CHOMATOBIUS* Humb. et Sauss.

1. *C. mexicanus* (Sauss.).
Geophilus mexicanus Saussure. Mem. Myriap. Mex., 132, t. VII, f. 49.
Chomatobius mexicanus Humb. et Sauss. Études sur les Myriap., 145 (1872); Seliwanoff, Zapiski Imperat. Akademii Nauk., 24, t. II, (1881).—California.

* The synonymy of this genus is as follows:

- 1843.—*Strigamia* Gray, in Todd's Cyclop. Anat. & Physiol., III, 547.
1847.—*Stenonia* Koch. Syst. d. Myriap., 85 (in part).
1847.—*Linotania* Koch. Syst. d. Myriap., 86.
1866.—*Scolioplanes* Bergsöe and Meinert. Nat. Tidsskr., IV, 98.

Family SCOLOPENDRIDÆ.

I. SCOLOPENDRA L.

1. *S. crudelis* Koch. Syst. der Myr. 170 (1847); Die Myriapoden II, 36, t. LXVII-LXXVIII (1863).
S. longipes Wood. Jour. Phila. Acad., v, 26 (1862).—Florida.
2. *S. dehaanti* Brandt. Recueil, 59 (1841).
S. bispinipes Wood. Jour. Phila. Acad., v, 28 (1862); Trans. Amer. Philos. Soc., XIII, 166 (1865).—California.
3. *S. heros* Girard, in Marcy's Exp. Red River, App. F, 243 (1853); Wood, Jour. Phila. Acad., v, 18 (1862); Trans. Amer. Philos. Soc., XIII, 155 (1865).
S. castaneiceps Wood. Proc. Phila. Acad., 1861, 11.
S. copeiana Wood. Jour. Phila. Acad., v, 27 (1862).
S. polymorpha Wood. Proc. Phila. Acad., 1861, 11.—SW.
4. *S. inaequidens* Gervais. Aptères IV, 277 (1847).—New York.
5. *S. morsitans* L. Syst. Nat. I, 1063; Wood, Trans. Amer. Philos. Soc., XIII, 161 (1865).
S. marginata Say. Jour. Phila. Acad., II, 100 (1821).—E. W. P.
6. *S. pachypus* Kohlrausch. Beiträge z. Kennt. d. Scolopendriden, 25 (1878); Archiv f. Naturgeschichte, 1881, 113.—California.
7. *S. pernix* Kohlrausch. Beiträge z. Kennt. d. Scolopendriden, 25 (1878); Archiv f. Naturgeschichte, 1881, 115.—“North America.”
8. *S. subspinipes* Leach. Trans. Linn. Soc., XI, 383.
S. byssina Wood. Proc. Phila. Acad., 1861, 10; Jour. Phila. Acad., v, 26 (1862); Trans. Amer. Philos. Soc., XIII, 164 (1865).—SP.
9. *S. viridis* Say. Proc. Phila. Acad. II, 110 (1821); Wood, Jour. Phila. Acad., v, 22 (1862); Trans. Amer. Philos. Soc., XIII, 159 (1865).
S. parva Wood. Proc. Phila. Acad., 1861, 10.
S. punctiventris Newp. Ann. and Mag. Nat. Hist., XIII, 100.—SE.
10. *S. woodii* Meinert. Proc. Amer. Philos. Soc., XXI, 198 (1885).
S. inaequidens Wood. Jour. Phila. Acad., v, 26 (1862); Trans. Amer. Philos. Soc., XIII, 162 (1865).—SE.

II. RHYSIDA Wood.*

1. *R. celer* (Humb. et Sauss.).
Branchiostoma celer Humbert et Saussure. Rev. et Mag. Zool., 1870, 202; Études Myriap., 122, t. VI, f. 16 (1872).—SE.

III. CRYPTOPS Leach.

1. *C. hyalinus* Say. Jour. Phila. Acad., II, 111 (1821).
?C. milberti Gervais. Aptères, IV, 592 (1847).
C. asperipes Wood. Proc. Phila. Acad., 1867, 129.
C. sulcatus Meinert. Proc. Amer. Philos. Soc., XXI, 211 (1885).—E.

IV. THEATOPS Newport.

1. *T. crassipes* (Meinert).†
Opisthemega crassipes Meinert. Proc. Amer. Philos. Soc., XXI, 209 (1885).—SE.

* *Branchiostoma* (Newport, 1844), being preoccupied, the above name, suggested by Dr. Wood in 1862, must be employed.

† Pocock, Ann. and Mag. Nat. Hist., 1888, 289, refers this species to *T. posticus*,—[U.]

2. **T. postica** (Say).*Cryptops postica* Say. Jour. Phila. Acad., II, 111 (1821).*Theatops postica* Newport. Trans. Linn. Soc. XIX, 411 (1844); Pocock, Ann. and Mag. Nat. Hist., 1888, 289.*Opisthemega postica* Wood. Jour. Phila. Acad., V, 35 (1862); Trans. Amer. Philos. Soc., XIII, 179 (1865).—E.3. **T. spinicauda** (Wood).*Opisthemega spinicauda* Wood. Jour. Phila. Acad., V, 36 (1862); Trans. Amer. Philos. Soc., XIII, 170 (1865).—E.V. **SCOLOPOCRYPTOPS** Newport.1. **S. gracilis** Wood. Jour. Phila. Acad. V, 38 (1862); Trans. Amer. Philos. Soc., XIII, 173 (1865).*S. lanatipes* Wood. Jour. Phila. Acad., V, 39 (1862); Trans. Amer. Philos. Soc., XIII, 175 (1865).*S. californica* Humb. et Sauss. Rev. et Mag. Zool., 1870, 204.—California.2. **S. miersii** Newport. Trans. Linn. Soc., XIX, 405 (1844).—California.*3. **S. nigridius** McNeill. Proc. U. S. Nat. Mus., X, 333 (1887).—E.4. **S. sexspinosus** (Say).*Cryptops sexspinosus* Say. Jour. Phila. Acad., II, 112 (1821).*Scolopocryptops sexspinosus* Newport. Trans. Linn. Soc., XIX, 407 (1844); Wood, Trans. Amer. Philos. Soc., XIII, 172 (1865).*S. georgicus* Meinert. Proc. Amer. Philos. Soc., XXI, 180 (1885).*S. spinicauda* Wood. Jour. Phila. Acad., V, 39 (1862); Trans. Amer. Philos. Soc., XIII, 174 (1865).*Scolopendropsis helvola* Koch. Syst. d. Myriap., 175 (1847); Die Myriapoden, II, 34, t. LXXVI, f. 156 (1862).—EP.Family **LITHOBIIDÆ**.I. **LITHOBIUS** Leach.§ **ARCHILITHOBIUS** Stuxberg.1. **L. bilabiatus** Wood. Proc. Phila. Acad., 1867, 130.—NE.2. **L. bipunctatus** (Wood).*Bothropolys bipunctatus* Wood. Jour. Phila. Acad., V, 16 (1862); Trans. Amer. Philos. Soc., XIII, 153 (1865).—P.*L. bipunctatus* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 3. 30.3. **L. branneri** Bollman. Ann. N. Y. Acad. Sci., 1888, 107.—Tennessee.4. **L. cæcus** Bollman. Ann. N. Y. Acad. Sci., 1888, 111.—Tennessee.5. **L. cardinalis** Bollman. Amer. Nat., XXI, 81 (1887).—Indiana.6. **L. eigenmanni** Bollman. Proc. U. S. Nat. Mus., X, 625 (1887).—British Columbia.7. **L. elattus** Bollman. Proc. U. S. Nat. Mus., XI, 348 (1888).—Virginia.8. **L. exiguus** Meinert. Myr. Musæi Haun., III, 110 (1886).—New York.9. **L. holzingeri** Bollman. Entom. Amer., III, 83 (1887).—Minnesota.10. **L. jowensis** Meinert. Proc. Amer. Philos. Soc., XXI, 177 (1885).—NE.11. **L. kochii** Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 68; No. 3, 30.—California.12. **L. lundii** Meinert. Myr. Musæi Haun., III, 111 (1886).—New York.13. **L. minnesotæ** Bollman. Amer. Nat., XXI, 81 (1887).—Minnesota.14. **L. monticola** Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 65; No. 3, 30.—California.

* Kohlrausch has recorded one from California.

15. *L. obesus* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 67; No. 3, 31.—California.
16. *L. paradoxus* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 67; No. 3, 31.—California.
17. *L. pinguis* Bollman. Entom. Amer., iv, 7 (1888).—Arkansas.
18. *L. proridens* Bollman. Amer. Nat., xxi, 81 (1887).—NE.
19. *L. pullus* Bollman. Amer. Nat., xxi, 81 (1887).—NE.
20. *L. pusio* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 66; No. 3, 30.—California.
21. *L. similis* Bollman. Ann. N. Y. Acad. Sci., 1887, 112.—Tennessee.
22. *L. trilobus* Bollman. Amer. Nat., xxi, 81 (1887).—Indiana.

§ HEMILITHOBIUS Stuxberg.

23. *L. cantabrigensis* Meinert. Proc. Amer. Philos. Soc., xxi, 177 (1885).—Massachusetts.
24. *L. euonemis* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 70; No. 3, 30.—New York.

§ PSEUDOLITHOBIUS Stuxberg.

25. *L. megaloporus* Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 69; No. 3, 29.—California.

§ LITHOBIUS Leach, s. str.

26. *L. atkinsoni* Bollman. Proc. U. S. Nat. Mus., x, 625 (1887).—North Carolina.
27. *L. aureus* McNeill. Proc. U. S. Nat. Mus., x, 327 (1887).—Florida.
28. *L. aztecus* Humb. et Sausa. Rev. et Mag. de Zool., 1869, 156; Études sur les Myriap. 116 (1872).—Mexico (P. f).*
29. *L. celer* Bollman. Entom. Amer. iv, 7 (1888).—Arkansas.
30. *L. forficatus* (L.).
Scolopendra forficata Linnæus. Syst. Nat. i, 638 (1758).
L. forficatus Leach. Trans. Linn. Soc. xi (1815).
L. spinipes Say. Jour. Phila. Acad. ii, 108 (1821).
L. americanus Newp. Trans. Linn. Soc. xix, 365 (1845); Wood, Jour. Phila. Acad. xiii, 148 (1865).—E., B.
31. *L. howei* Bollman. Amer. Nat. xxi, 81 (1887).—Minnesota.
32. *L. œdipes* Bollman. Entom. Amer. iv, 8 (1888).—Arkansas.
33. *L. paucidens* Wood. Jour. Phila. Acad. v, 14 (1862); Trans. Amer. Philos. Soc. xiii, 151 (1865).—P.
34. *L. pinetorum* Harger. Amer. Jour. Sci. 3d ser. iv, 116 (1872).—Oregon.
35. *L. planus* Newport. Linn. Trans. xix, 366 (1845); Wood, Trans. Amer. Philos. Soc. xiii, 151 (1865).—B†
36. *L. xanti* (Wood).
Bothropulus xanti Wood. Jour. Phila. Acad., v, 15 (1862); Trans. Amer. Philos. Soc. xiii, 152 (1865).
L. xanti Stuxberg. Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 3, 27.

§ NEOLITHOBIUS Stuxberg.

37. *L. clarus* McNeill. Proc. U. S. Nat. Mus., x, 326 (1887).—Florida.
38. *L. juvenis* Bollman. Proc. U. S. Nat. Mus., x, (1887).—Indiana.
39. *L. latzei* Meinert. Proc. Amer. Philos. Soc., xxi, 175 (1885).—Virginia.
40. *L. mordax* L. Koch. Die Myriapodengattung Lithobius, 34 (1862).—Louisiana.

* No. 28 is doubtfully within our limits. It was included in Bollman's list without note or comment.—[U.]

41. *L. transmarinus* L. Koch. Die Myriapodengattung *Lithobius*. 31 (1862).—Louisiana.
 42. *L. tyrannus* Bollman. Proc. U. S. Nat. Mus., x, 626 (1887).—Indiana.
 43. *L. underwoodi* Bollman. Proc. U. S. Nat. Mus., xi, 350 (1888).—Georgia.
 44. *L. vorax* Meinert. Myr. Musæi Haun., ii, 292 (1872).—Louisiana.
 45. *L. xenopus* Bollman. Proc. U. S. Nat. Mus., xi, 350 (1888).—Georgia.
 § *EULITHOBIUS* Stuxberg.
 46. *L. multidentatus* Newport. Linn. Trans., xix, 365 (1845).
Bothrypolya nobilis Wood. Jour. Phila. Acad., v, 15 (1862).
B. multidentatus Wood. Trans. Amer. Philos. Soc., xiii, 152 (1865).—NE.
 47. *L. rex* Bollman. Proc. U. S. Nat. Mus., xi, 350 (1888).—Georgia.

II. *HENICOPS* Newport.

1. *H. fulvicornis* (Meinert).
Lamyctes fulvicornis Meinert. Naturhistorisk Tidsskrift, 3rd R., v, 267 (1872);
 Stuxberg, Ofvers. af Kgl. Vet.-Akad. Förhandl., 1875, No. 2, 72; No. 3, 31.
Henicops fulvicornis Latzel. Die Myriap. der Oest.-Ung. Monarchie, i, 133
 (1881).—New York, Arkansas.

Family SCUTIGERIDÆ.

I. *SCUTIGERA* Latr.

1. *S. forceps* (Raf.).
Selista forceps Raf. Ann. of Nature, No. 1, 7 (1820).
Cermatia coleoptrata Say. Jour. Phila. Acad., ii, 5 (1821).
C. floridana Newport. Trans. Linn. Soc., xix, 353 (1845).
C. forceps Wood. Jour. Phila. Acad., v, 9 (1862); Trans. Amer. Philos. Soc.
 xiii, 145 (1865).—E.
 2. *S. linnei* (Wood).
Cermatia linnei Wood. Proc. Phila. Acad., 1867, 42.—Texas.

Summary.

	Genera.	Species.
DIPLOPODA.		
Family Polyzonidæ	4	5
Family Julidæ	8	42
Family Lysitopetalidæ	1	3
Family Craspedosomidæ	5	15
Family Polydesmidæ	9	49
Family Polyxenidæ	1	1
	28	115
PAUROPODA.		
Family Pauropodidæ	1	2
Family Eurypauropodidæ	1	1
	2	3
CHILOPODA.		
Family Geophilidæ	5	50
Family Scolopendridæ	5	19
Family Lithobiidæ	2	48
Family Scutigeridæ	1	2
	13	119
Total	43	237

SOME NEW SPECIES OF NORTH AMERICAN MYRIAPODS.*

BY CHARLES HARVEY BOLLMAN.

The following new species are described from specimens in the museum of the Indiana University and my own collection. Six of these are from Bloomington, Indiana, thus making 18 new species which have been described from that locality. Three others were found in a very small collection made at Fort Snelling, Minnesota.

The types of the new species are in the museum of the Indiana University and specimens of *Scoliopterus ruber* and *Lithobius cardinalis*, *proridens*, and *pullus* have been sent to Dr. Anton Stuxberg, of Gothenburg, Sweden.

1. *Julus burkei*.

[*Julus burkei* Bollman. Amer. Nat., XXI, 82 (1887).

Nannolene burkei Bollman. Entom. Amer., II, 225 (1887); Ann. N. Y. Acad. Sci., IV, 40 (1887).]

Light yellowish-brown, with darker shadings, a row of black spots along each side, feet and antennæ paler. Slender, wrinkled like leather. Vertex with a slender, median sulcus, no foveolæ, wrinkled like the back. Antennæ crasse-clavate, the last joints rather densely pilose, about equaling the breadth of body. Ocelli arranged in a triangular form, in three or four series, about 18, inconspicuous, the upper not filled out, a few covered by the first dorsal scuta. Segments 45-47; the first segment large, semicircular, the posterior angle barely rounded, sides striate; other segments moderately striate, the posterior margin with a row of hairs. Repugnatorial opening conspicuous, not touching the transverse line or forming a bend in it. Anal segment rounded, not projecting beyond the anal valves; anal valves with a few hairs, marginate; anal scales distinct, rounded. Pairs of feet 70-72, moderately long and slender. Length of body, 14^{mm}.

Habitat.—Ukiah, California (James H. Burke).

There are two specimens in the museum of the Indiana University, which were labeled *J. hortensis*.

* This paper was found among the effects of the late Charles H. Bollman. It contains full descriptions of ten new forms of Myriapods. Brief diagnoses of nine of these species have already been published in the American Naturalist, Volume XXI, pp. 81, 82 (January, 1887). *Scotopocryptops calcaratus* has not been before described. It seems desirable that these fuller descriptions should be published in order to enable future students of the subject to more certainly identify the species.—LUCIEN M. UNDERWOOD.

2. *Julus ellipticus*.[*Julus ellipticus* Bollman. Am. Nat., xxi, 82 (1887).][*Parajulus ellipticus* Bollman. Ann. N. Y. Acad. Sci., iv, 35 (1887).]

Chesnut, marked with lighter and darker; a black median line, a row of spots on each side, antennæ dark brown, feet pale. Rather robust, attenuated before, but only slightly behind, not smooth. Vertex with a very slight median sulcus, no foveolæ, a little roughened. Antennæ filiform, moderately pilose, not equaling the breadth of body. Ocelli arranged in an elliptical form, in seven series, rather small, 45-48. Segments 46-47; the first broadly rounded and produced before, straight behind, angles rounded, sides striate, other segments moderately striate beneath, those of the præscuta very oblique, being nearly straight up and down, while the others are but slightly oblique. Repugnatorial opening small, situated near the anterior border, transverse line bending before it. Anal segment with a long, robust spine, which projects beyond the anal valves; anal valves not pilose, scarcely marginate; anal scale short, broadly rounded. Pairs of feet 75-80, rather long. Length of body 25^{mm}.

Habitat.—Fort Snelling, Minnesota (W. D. Howe).

I have two females in my private collection.

3. *Fontaria virginiensis castanea*.[*Fontaria virginiensis castanea* Bollman. Am. Nat., xxi, 82 (1887).]

Chesnut-brown, lateral laminae and the borders of the first segment yellow, an indistinct, black dorsal line; feet and under parts pale. Segments more rugose than in *virginensis*; last segment blunt, with a few long hairs. Spine of the trochanter longer and sharper. Antennæ and feet more densely pilose. Length of body 25^{mm}.

Habitat.—Fort Snelling, Minnesota (W. D. Howe).

I have one male in my collection.

4. *Scolioplanes ruber*.[*Scolioplanes ruber* Bollman. Amer. Nat., xxi, 81 (1887).]

Rather robust, attenuated anteriorly and posteriorly, the attenuation most marked before; in life bright red, the posterior two thirds and the feet darkest; in alcohol fulvous, the head and mouth parts brown; sparsely hirsute, feet not so decidedly. Prehensorial feet barely extending beyond the cephalic margin of the head, sparsely hirsute, with moderately long hairs; sternum cordiform, wider than long (6:4); coxa unarmed; the tooth blunt, short. Cephalic lamina longer than wide (7:5), sparsely hirsute, rather smooth, sides scarcely rounded; lamina basalis (6:2.5); lamina prebasalis concealed; lamina frontalis present. Antennæ moderately long, rather slender; all the joints except the first, antepenult, and penult moderately long. Laminae ventrales with a large, shallow, median foveolæ, a smaller one on each side; pores more numerous on the posterior half of the plates. First pair

of feet shorter than the second, posterior scarcely longer than the anterior. Posterior coxæ slightly inflated; pores moderate in numbers, large and small; last ventral lamina narrow; sides straight, converging. Last pair of feet not much longer than the first, crassate in the male, in the female somewhat enlarged; spine small. Pairs of feet in the male 67-69, in the female 71-73. Length of body 53^{mm}; breadth 2^{mm}.

Habitat.—Bloomington, Indiana.

This species is described from 12 specimens, and is not uncommon. It has the habits of the other members of this genus.

5. *Scolopocryptops calcaratus*, sp. nov.

Head fulvous, body green, the last two segments the same color as the head, feet lighter than the body, antennæ dull green, the last few joints fulvous. Antennæ moderately long, joints 17, minutely and densely hirsute, last joint rather long. Body not robust, depressed, rather wide, sparsely and shortly hirsute. Prehensorial feet with the spine rather large and slender; sternum a little produced, the anterior margin nearly straight; coxa with a single short, blunt tooth. Anal feet moderate, the last three joints rather densely and minutely hirsute, the rest sparsely; inferior spine large, strong, and sharp; interior small and sharp. Posterior coxæ scabrous, pores numerous; spine moderate, sharp. Last ventral lamina wide, narrowed posteriorly; the tip rounded, side nearly straight. Length of body 33^{mm}; breadth 4^{mm}.

Habitat.—Bloomington, Indiana.

This species is described from one specimen, which was found under leaves in a heavily wooded tract.

6. *Lithobius howei*.

[*Lithobius howei* Bollman. Amer. Nat., xxi, 81 (1887).]

Brown, head dark, ventral laminae and feet paler; robust, nearly smooth; feet sparsely pilose; cephalic lamina subquadrate, of about equal length and breadth. Antennæ moderate, joints 20, rather large, moderately pilose. Ocelli about 20, in six series. Prosternal teeth 6, moderate. Coxæ pores $\frac{5.5, 5.4}{5.5, 6.3}$ round. First pair of feet armed with 0,2 spines; penultimate lost; last 1,3,3,1. Last pair of feet moderate. Length of body, 15^{mm}; breadth, 2.5^{mm}.

Habitat.—Fort Snelling, Minnesota.

This species belongs to the subgenus *Lithobius*. It is described from one specimen taken by Mr. Walter D. Howe.

7. *Lithobius proridens*.

[*Lithobius proridens* Bollman. Am. Nat., xxi, 81 (1887).]

Yellowish-brown of varying shades, head darkest, ventral laminae, feet and antennæ light; slender, smooth, feet and sometimes the last ventral laminae moderately pilose; cephalic laminae subcordate, broader

than long (8:7). Antennæ moderate, joints 25-29, joints short, rather densely hirsute. Ocelli 9-12, in 4 or 5 series. Prosternal teeth 10 or 12, rather small and not sharp. Coxæ pores 4,5,5,4 or 3,4,4,3, round. Spines of the first pair of feet 2,2,1; penultimate pair 1,3,3,2 or 1,3,2,1; last pair 1,3,3,2 or 1,3,3,1. Posterior feet moderate. Claw of the female genitalia whole, rather long and slender; spines rather long and slender, of about equal length. Length of body, 13^{mm}; breadth, 1.8^{mm}.

Habitat.—Bloomington, Indiana.

This species is common under leaves on wooded hillsides; it belongs to the subgenus *Archilithobius*.

8. *Lithobius cardinalis*.

[*Lithobius cardinalis* Bollman. Am. Nat., xxi, 81 (1887).]

Brown, ventral laminae and feet paler; head fulvous brown, antennæ darkest, tip rufous; rather slender, smooth, very sparsely pilose, feet sparsely; cephalic laminae subcircular, wider than long (7:6); antennæ moderate, joints 28, small, rather densely hirsute throughout; ocelli 10, in 4 or 5 series; prosternal teeth 4, rather large; coxæ pores 3,4,4,3, round; spines of the first pair of feet 0,2,1; penultimate 1,3,3,1; last 1,3,3,1; posterior feet rather long; claw of the female genitalia tripartite, short and stout; spines robust, sharp, interior shortest. Length of body, 8^{mm}; breadth, 1^{mm}.

Habitat.—Bloomington, Indiana.

This species is common; I have taken it most abundantly under boards laid on a thick growth of grass in March and April. It belongs to the subgenus *Archilithobius*.

9. *Lithobius pullus*.

[*Lithobius pullus* Bollman. Am. Nat., xxi, 81 (1887).]

Brown, head darkest, feet and ventral laminae paler; feet sparsely hirsute; cephalic lamina subquadrate, longer than wide (11:10). Antennæ moderate, joints 20, not very short, moderately pilose. Ocelli 9-12, in four series. Prosternal teeth 4, moderate. Coxæ pores 3,4,4,3, round. Spines of the first pair of legs 1,2,1; penultimate 1,3,2,1; last 1,3,3,1. Posterior feet moderate. Claw of the female genitalia tripartite, the inner lobe larger than the other, spines rather robust, sharp, the inner smallest; in one specimen there are three on one side. Length of body, 10^{mm}; breadth, 1^{mm}.

Habitat.—Bloomington, Indiana.

This species belongs to the subgenus *Archilithobius*, and is described from nine specimens.

10. *Lithobius trilobus*.

[*Lithobius trilobus* Bollman. Am. Nat., xxi, 81 (1887).]

Brown, head light mahogany, feet and ventral laminae pale; feet sparsely pilose and also the last ventral laminae, cephalic lamina subcordate, broader than long (7:6). Antennæ moderate, joints 20, mostly

short, moderately pilose. Ocelli 18-23, in six slightly oblique series. Prosternal teeth 4, moderate. Coxal pores, 3,4,4,3, round. Spines of the first pair of feet 1,3,1; penultimate 1,3,2,1; last pair 1,3,1, the fifth joint on each side produced into a short, rounded lobe at the apex and armed with a few spines in the male, as in *Lithobius nordenskiöldii*.* Posterior feet moderately long. Length, 13^{mm}; breadth, 1^{mm}.

Habitat.—Bloomington, Indiana.

This species belongs to the same subgenus as the preceding, and is described from two females and one male.

* I have found two male *L. bilabiatu*s, which have the posterior legs, as described by Wood.

NOTES ON THE SYNONYMY OF THE MYRIAPODA.*

By CHARLES HARVEY BOLLMAN.

1. POLYZONIINÆ.

- 1841.—*Omatophora* Brandt. Recueil, 49.
1872.—*Platydesmiens*. Miss. Scientif. Mex., Zool., VI, 199.
1884.—*Platydesmia* (Sauss. (†)) Latzel. Myr. Öst. Ungar. Monarch., II, 356.

Placing *Siphonophora* and its allies in a separate subfamily leaves the remaining genera as a similar group to which we must give the name POLYZONIINÆ, because it contains the type of the family *Polyzoniida*.

2. SIPHONOPHORINÆ.

- 1840.—*Typhlogena* Brandt. Recueil, 50.
1844.—*Siphonophoridae* Newport. Trans. Linn. Soc., 278.
1869.—*Andrognathidae* Cope. Proc. Amer. Philos. Soc., 182.
1884.—*Dolistenia* Latzel. Myr. Öst. Ungar. Monarch., II, 362.

Many writers have seen fit to detach *Siphonophora* from related genera, and to make of it a separate family or subfamily. As no characters of importance exist except those drawn from the form of body, it seems best, therefore, to give it the rank of a subfamily only.

To place *Andrognathus* Cope in this subfamily makes the number of segments valueless as a subfamily character.

3. ANDROGNATHUS.

- 1869.—*Andrognathus* Cope. Proc. Amer. Philos. Soc., 182 (*corticarius*).
1875.—*Dolistenus* Fanzago. Atti Soc. Ven. Trent. Sci. Nat., 62 (*sarii*).
1884.—*Dolichostenus* Latzel. Myr. Öst. Ungar. Monarch., II, 68 (emendation).
1884.—*Dolistenus* Berlese. Acari, Myr. & Scorp. Ital., Fas. XII, No. 2 (emendation).

A careful comparison of *Andrognathus* and *Dolistenus* has shown that the two genera are inseparable, and the latter must stand as a synonym of *Andrognathus*.

Dr. Berlese has used his emendation of *Dolistenus* in all his works, while Dr. Latzel's only occurred in a foot-note, and was intended to show how *Dolistenus* should be spelled according to its derivation.

4. POLYZONIUM.

- 1831.—*Polyzonium* Brandt. Oken's Isis, 704 (*germanicum*).
1836.—*Platylus* Gervais. Bull. Soc. Phil. Paris, 71 (*audouini*=*germanicum*).
1839.—*Leiosoma* Victor. Bull. Nat. Moscow, 44, pl. I (*rosea*=*germanicum*).

* This paper was found among Mr. Bollman's manuscripts. Though fragmentary in character, it is believed to contain matter of sufficient importance to warrant publication.—[L. M. U.]

1870.—*Petaserpes* Cope. Trans. Amer. Ent. Soc., 65 (*rosalbus*).

1880.—*Hirudisoma* Fanzago. Bull. Soc. Ent. Ital., 276 (*pallidum*).

1887.—*Hexaglena* McNeill. Proc. U. S. Nat. Mus., 328 (*cryptocephala*=*rosalbus*).

From the above synonymy it can be seen that I have united the American genera *Petaserpes* and *Hexaglena* with the European genus *Polyzonium*.

Concerning *Petaserpes* I wish to call attention to the following sentence in Dr. Cope's diagnosis: "Annulæ without lateral processes, each with two pores, forming two rows on each side of the body."

The first part implies that each annula has two pores, but his next phrase that each has *four* instead of *two*.

This obscurity of statement led Mr. McNeill to form his *Hexaglena*, which has only one row of foramina repugnatoria on each side of the body, as was no doubt the case in Dr. Cope's specimens.

5. OCTOGLENA.

1864.—*Octoglena* Wood. Proc. Phila. Acad. Nat. Sci., 186 (*bivirgata*).

I have never seen a specimen belonging to this genus, but as it is somewhat of a stumbling block, I call attention to the following points:

Judging from Dr. Wood's figures and some remarks by Dr. Cope, it seems to me that *Octoglena* is closely related to *Polyzonium*, but that it differs in having the first dorsal plate not produced to the base of the antennæ, and the body much narrower than in *Polyzonium*.

6. PLATYDESMUS.

1843.—*Platydesmus* Lucas. Ann. Soc. Ent. France, 51 (*polydesmoides*).

1849.—*Piestodesmus* Lucas. Rev. et. Mag. Zool., 589 (*moreleti*).

1864.—*Brachycybe* Wood. Proc. Phil. Acad. Nat. Sci., 187 (*lecontei*).

The above nominal genera seem to agree in the shape of body, markings of segments, and structure of mouth parts, while the number of ocelli varies. *Platydesmus* has one, *Piestodesmus* has two, and *Brachycybe* has none, but until all these points can be verified it is not safe to form subgenera on this character.

7. STEMMIULUS.

1844.—*Stemmiulus* Gervais. Ann. Soc. Ent. France, 28 (*bioculatus*).

1881.—*Stemmiulus* Karsch. Neue Jul. Ber. Mus., als Prod. Jul. Monograph., II (emend.).

This genus has been ranked by Dr. Latzel as only a subgenus of *Julus*, but on account of the peculiar number of ocelli I believe it ought to be given a full generic rank, at least until more can be ascertained about the structure of the mouth parts.

The original orthography of Gervais should be employed.

8. JULUS.

1758.—*Julus* Linné.

—.—*Julus*, of most authors.

1847.—*Allajulus* Koch, Syst. Myr., 46 and 106 (*punctatus*, etc.).

1883.—*Pachyiulus* Berlese. Acari, Myr. Scorp. ital., Fasc. VIII, No. 1 (*rarius* and *sabulosus*).

1883.—*Diploiulus* * Berlese. Acari, Myr. Scorp. ital., Fasc. VIII, No. 1 (*terrestris* and *dalmaticus*).

1884.—*Julus* Berlese. Acari, Myr. Scorp. ital., Fasc. XII (*sabulosus*).

1884.—*Ophiulus* Berlese. Acari, Myr. Scorp. ital., Fasc. XII (*terrestris*).

1884.—*Brachyulus* and *Brachyiulus* Berlese. Acari, Myr. Scorp., ital., Fasc. XII (*dalmaticus*).

1884.—*Typhloiulus* Latzel. Myr. Öst. Ungar. Monarch., II, 260 (*psilonotus*).

1884.—*Atlaiulus* Latzel. Myr. Öst. Ungar. Monarch., II, 264 (*nanus*; emendation).

1884.—*Ommatoiulus* Latzel. Myr. Öst. Ungar. Monarch., II, 277 (*fetidus*).

1886.—*Tiphloiulus* Berlese. Jul. Mus. Firenze, 91 (emendation).

1886.—*Pachiulus* Berlese. Jul. Mus. Firenze, 29 (emendation; *rarius*).

1886.—*Archiulus* Berlese. Jul. Mus. Firenze, 44 (*sabulosus*).

1886.—*Brachiulus* Berlese. Jul. Mus. Firenze, 90 (emendation; *pusillus*).

1886.—*Ophiulus* Berlese. Jul. Mus. Firenze, 63 (emendation; *fallax*).

I wish to call attention here to the subgenera of *Julus*. I do not believe that Latzel's subgenera based on the characters of the ocelli ought to be adopted, because this character is subject to considerable variation. It will probably be best to retain those established by Berlese in his "*Julidi del Museo di Firenze*," except that the following changes must be made: *Archiulus* must give way to a subgenus *Julus*, because this division contains the type of *Julus*. The following orthography should be used: *Pachyiulus*, *Ophiulus*, *Brachyiulus* (*Brachyulus*), and *Typhloiulus*, in place of that used in the above pamphlet.

9. NEMASOMA.

1847.—*Nemasoma* Koch. Syst. Myr., 47 and 116 (*varicorne*).

1851.—*Isobates* Menge. Neu. Schrift. naturf. Gesellsch. Danz., IV, 6 (*semisulcatus*).

The name *Isobates* has always been used by European authors, because *Nemasoma* Koch was said to be preoccupied by one of Latreille's genera.

I find from Agassiz's Nomenclator that Latreille's genus is spelled *Nemosoma*, a word sufficiently different from *Nemasoma*.

Although this is a small difference between the two genera, nevertheless *Nemasoma* must be used in place of *Isobates*.

10. PARAJULUS.

1869.—*Parajulus* Humbert & Saussure. Rev. et Mag. Zool., 155 (*olmecus*).

1884.—*Paraiulus* Latzel. Myr. Öst.-Ungar. Monarch., 55 (emendation).

1887.—*Pseudojulus* Bollman. Ent. Amer., 226 (*obtectus*).

I have ascertained that my subgenus *Pseudojulus*, which was based upon the characters of a male, represents only a certain stage of development, and must be considered as a true synonym of *Parajulus*.

* 1884.—*Diploiulus* Berlese. Acari, Myr. Scorp. ital., Fasc. XII (*rufifrons* and *latzelii*).

11. SPIROSTREPTUS.

- 1833.—*Spirostreptus* Brandt. Bull. Soc. imp. Nat. Moscou, 203 (*sebae* and *audouini*).
 1833.—*Spirocyclistus* Brandt. Bull. Soc. imp. Nat. Moscou, 204 (*acutangulus*).
 1833.—*Spiropæus* Brandt. Bull. Soc. imp. Nat. Moscou, 204 (*fischeri*).
 1841.—*Nodopyge* Brandt. Recueil 91 (*jaranicus*, *sebae*, *audouini*, etc.).
 1841.—*Odontopyge* Brandt. Recueil, 110 (*bicuspidatus*, *flavotæniatus*, *gracilicornis*, etc.).

Brandt in his subdivision of *Spirostreptus* did not retain the original name of the genus for that division of it which contained the original type of the genus. Now, as *Nodopyge* contains the type of *Spirostreptus*, the name *Spirostreptus* must be used in place of *Nodopyge*. *Spiropæus* is also identical with *Spirostreptus*, and as its types belong to his subgenus *Odontopyge*, it must be used in place of *Odontopyge* on account of its priority.

12. PÆROMOPUS.

- 1881.—*Pæromopus* Karsch. Einige neue dip. Myr. Ber. Mus., 12 (*lysiopetalinus* = *Spirobolus angusticeps* Wood).

This genus has been considered by Latzel as identical with *Julus*, but the following from Dr. Karsch's generic description has led me to believe that it should be recognized as a valid genus:

"*Ocellis oculorum seriebus utrinque 3 tantum transversis compositis . . . antennis pedibusque longissimis . . . colo in mare appendicibus crassis haud pediformibus sat longis instructo . . . metatarsis pedum pelma munitis.*"

None of the species of *Julus* ever attain a length of over 100 millimeters, while those of *Pæromopus* are from 150 to 165 millimeters long.

So far the mouth parts and gnathochilarium, which always present the best generic characters, have not been examined.

13. TRACHYJULUS.

- 1864.—*Trachyjulus* Peters. Monatsber. Kön. preuss. Akad. Wiss., 547 (*ceylonicus*).
 1884.—*Trachyiulus* Latzel. Myr. Öst.-Ungar. Mon., 11, 56 (emend.).

This genus is closely related to *Acanthiulus*, but is easily separated by the following characters: Ocelli in a single series. Antennæ and legs moderately long. Posterior border of first segment carinated, sides not produced as in *Acanthiulus*. Other segments, except the last, with 13 to 21 rows of carinæ.

First, second, and third segments each with one pair of legs, fourth, footless. Peters' orthography *Trachyjulus* ought to be used instead of *Trachyiulus*, which emendation has been used by later authors. The same must be the rule with *Acanthiulus* and *Glyphiulus*.

14. ACANTHIULUS.

- 1847.—*Acanthiulus* Gervais. Ann. Sci. Nat., 70 (*blainvillii*).

This genus was first recognized by Gervais as a subgenus of *Julus*, but as it bears no relation to *Julus* it has been raised by later authors to a generic rank.

I would call attention to the fact that Latzel has considered it as probably identical with *Trachyjulus* Peters, and has given preference to the latter name, although it was given nearly twenty years afterwards.

In this paper I have considered *Acanthiulus* as distinct from *Trachyjulus*. My reasons for this may be found in the following characters which I have culled from Gervais's descriptions and figures of *A. blainvillii*.

Ocelli in more than one series; antennæ resembling that of *Cambala*; first and last segments smooth; other segments striate beneath and armed above with eight rows of tubercles, eight on each segment; also a median dorsal series of indistinct tubercles.

Sides of first segment produced backwards (male?).

15. CRASPEDOSOMIDÆ.

1814.—*Iulides* Leach. Trans Linn. Soc., 376 (in part).

1842.—*Craspedosomadæ* Gray. Todd's Cyclop. of Anat. and Phys., III, 546 (in part).

1847.—*Chordeumiden* Koch. Syst. Myr., 49 and 119.

1869.—*Craspedosomidæ* Humbert & Sanssure. Rev. et Mag. Zool., 153 (in part).

1884.—*Chordeumidæ* Latzel. Myr. Öst.-Ungar. Monarch., II, 171.

According to the synonymy given above this family should be called *Craspedosomidæ* and not *Chordeumidæ*.

Gray's and not Koch's name should be employed.

16. CHORDEUMA.

1847.—*Chordeuma* Koch. Syst. Myr., 51 and 124 (*sylvestre*).

1872.—*Trichopetalum* Harger. Amer. Journ. Sci. and Arts, 117 (in part; *iulioides*).

1884.—*Læriulus* Berlese. Acari, Myr. et Scorp ital., Fasc., XII, 6 (*inermis* = *C. sylvestre*).

I agree with Dr. Latzel in considering the *Trichopetalum iulioides* Harger as belonging to the genus *Chordeuma*; although there is some probability that it may be the young of some *Campodes*. *Læriulus* Berlese, which was placed by him in the *Lysiopetalidæ* is a member of the *Craspedosomidæ*, and is also identical with *Chordeuma*.

17. CAMPODES.

1847.—*Campodes* Koch. Syst. Myr., 51 and 126 (*flavicornis* = *fusicornis*).

1869.—*Pseudotremia* Cope. Proc. Amer. Philos. Soc., 180 (in part; *rudii* = *C. flavicornis*).

1883.—*Cryptotrichus* Packard. Proc. Amer. Philos. Soc., 189 (*Spirostreptus cæcioanulatus* Wood = *C. flavicornis*).

Campodes Koch has always been overlooked by American authors, as, in fact, have been nearly all the works of Koch. The result has been the description of several genera that are identical with earlier names of his. In the above synonymy I have included *Pseudotremia* Cope as forming a part of *Campodes*, while *Cryptotrichus* Packard is also identical with the latter.

18. POLYDESMINÆ.

1872.—*Polydesmia* Humbert and Saussure. Miss. scientif. Mex. Zoöl., VI, 25 (*teste* Latzel).

1880.—*Cryptodesmoidea* Karsch, Mittheil. Münch. Ent. Ver., 143.

The subfamilies of *Polydesmidæ* established by Humbert and Saussure and also retained by Latzel seem to me to be worthy of their rank.

In accordance with common custom I have changed *Polydesmia* to *Polydesminæ*.

19. SPHÆRIODESMINÆ.

1872.—*Sphæriodesmia* Humbert and Saussure. Miss. scientif. Mex. Zoöl., VI, 20 (*teste* Latzel).

20. LEPTODESMUS.

1847.—*Oxyurus* Koch. Syst. Myr., 60 and 139 (*vestitus*).

1859.—*Leptodesmus* Saussure. Linn. Ent., XIII, 323 (*granulosus*).

As *Oxyurus* Koch is preoccupied (*Oxyurus* Raf., Pisces, 1810; *Oxyurus* Swains., Aves, 1827), *Leptodesmus* Saussure must be employed instead of *Oxyurus*.

21. RHACOPHORUS.

1847.—*Rhacophorus* Koch. Syst. Myr., 59 and 137 (*Poly. conspersus* Perty).

1864.—*Cryptodesmus* Peters. Monatsber. kön. preuss. Akad. Wiss., 621 (*alatus*, etc.).

Cryptodesmus has been rightly considered by Latzel as being a subgenus of *Rhacophorus*.

The following is a key to the subgenera:

- a. First dorsal plate normal, not concealing the head RHACOPHORUS.
- aa. First dorsal plate strongly produced forward and completely concealing the head.
CRYPTODESMUS.

22. STENONIA.

1842.—*Stenonia* Gray. Todd's Cyclop. Anat. and Phys., III, 546 (*druui*).

1847.—*Platyrhacus* Koch. Syst. Myr., 59 and 131 (*scaber* = *Stenonia*, s. str.).

1860.—*Odontodesmus* Saussure. Myr. Mex., 70 (*jaranus*).

1864.—*Acanthodesmus* Peters. Monatsber. kön. preuss. Akad. Wiss., 547 (*scutatus*, etc.)

Platyrhacus, *Odontodesmus* and *Acanthodesmus* have been considered as subgenera of *Stenonia*; but as *Stenonia* has not been properly subdivided—no subgenus *Stenonia* having been set apart—I have compiled the following analytical key for the separation of the subgenera:

- a. Basal joint of legs not provided with a spine.
- b. Body slender, lateral carinæ moderately developed, repugnatorial pores submarginal, second dorsal plate much wider than the first ODONTODESMUS.
- bb. Body wide; lateral carinæ strongly developed; repugnatorial pores superior, more or less distant from lateral margin of carinæ; second dorsal plate normal.
STENONIA.
- aa. Basal joint of legs armed with a spine ACANTHODESMUS.

23. SCYTONOTUS.

1847.—*Scytônotus* Koch. Syst. Myr., 57 and 130 (*scabricollis* = *granulatus* Say).

1864.—*Trachelodesmus* Peters. Monatsber. kön. preuss. Akad. Wiss., 623 (*constrictus*).

I agree with Dr. Latzel in considering *Trachelodesmus* as a subgenus of *Scytonotus*. The subgenera may be distinguished as follows:

a. Anterior segments not strikingly attenuated; antennæ and legs normal.

SCYTONOTUS.

aa. Anterior segment noticeably attenuated; legs rather long; antennæ long and slender.....TRACHELODESMUS.

24. SPHÆROTHERIINÆ.

1833.—*Sphærotheria* Brandt. Bull. Soc. Natur., Moscow, VI, 198.

The subfamilies of *Glomeridæ* established by Brandt and retained by other authors are probably valid. In accordance with common custom I have changed *Sphærotheria* to *Sphærotheriinae*.

25. GLOMERINÆ.

1833.—*Glomeridia* Brandt. Bull. Soc. Natur., Moscow, VI, 194.

This subfamily should be called *Glomerinae* and not *Glomeridia*.

26. MEINERTIA, nom. gen. nov.

1870.—*Scotophilus* Meinert. Myr. Mus. Haun., Pt. 1, 40 (*bicarinatus*).

As *Scotophilus* Meinert is preoccupied (*Scotophilus* Leach, Mamm., 1822; *Scotophilus* Swains., Aves, 1837), another name must be used as a substitute, and I propose the above name in honor of its original describer, Dr. Meinert, to whom all myriapodists are indebted for his excellent works on the Chilopods.

27. LINOTÆNIA.

1842.—*Strigamia* Gray. Todd's Cyclop. of Anat. and Physiol., Vol. III, 547.

1847.—*Stenonia* Koch. Syst. Myr., 85 and 187 (in part; *Geophilus acuminatus* Leach = *Linotænia acuminata* (Leach)).

1847.—*Linotænia* Koch. Syst. Myr., 86 and 188 (*Geophilus crassipes* Koch = *Linotænia acuminata* (Leach)).

1866.—*Scolioplanes* Bergsøe and Meinert. Nat. Tidsskr., IV, 98 (*Geophilus maritimus* Leach, *Geophilus acuminatus* Leach, and *Linotænia crassipes* Koch = *Linotænia acuminata* (Leach)).

In their work on the "*Danemark's Geophiler*," Bergsøe and Meinert erected the genus *Scolioplanes*, which included *Geophilus maritimus* Leach, *Geophilus acuminatus* Leach, and *Linotænia crassipes* Koch, but as the last species (*crassipes* Koch = *acuminata* Leach) was the type of Koch's *Linotænia*, the latter name must be used in place of *Scolioplanes*.

The true type (*Geophilus linearis* Koch) of *Stenotænia* is a *Geophilus*, and *Stenotænia* must be considered identical with *Geophilus*.

28. THEATOPS.

1844.—*Theatops* Newport. Trans. Linn. Soc., 409 (*Cryptops postica* Say.)

1863.—*Opisthemega* Wood. Journ. Phila. Acad. Nat. Sci., 35 (*postica* = *Cryp. postica* Say)

Opisthemega Wood has principally been used in place of *Theatops*, because Newport based his genus upon an erroneous character—the possession of an ocellus. In his description of *Theatops*, Newport says: "*Ocelli distincti*"; while in the description of its species, he says: "*Ocellis inconspicuis, lateralibus*." In these two statements Newport seems to contradict himself and to be uncertain about the possession of an ocellus. Probably Newport has mistaken an accumulation of pigment for an ocellus, and his observations as to the possession of an ocellus are erroneous, at any rate, Say did not see a trace of an ocellus in the same specimens.

The supposition that Newport has made an erroneous observation is further strengthened by the fact that the possession of an ocellus is the only difference between *Theatops* and *Opisthemega*. Notwithstanding this erroneous derivations of *Theatops*, it must be used in place of *Opisthemega*.

29. MONOPS.

1847.—*Monops* Gervais. Aptères, iv, 294 (*Cryptops nigra* Newport).

This name was first used by Billb. in 1820, as a genus of Crustacea, and *Monops* Gervais must give place to another.

30. RHYSIDA.

1844.—*Branchiostoma* Newport. Trans. Linn. Soc., 411 (*lithobiodes*).

1863.—*Rhysida* Wood. Journ. Phila. Acad. Nat. Sci., 40.

As *Branchiostoma* Newport is preoccupied by a genus of fishes, Dr. Wood has proposed the name *Rhysida* as a substitute, which we are compelled to use in place of *Branchiostoma*.

31. DACETUM.

1844.—*Heterostoma* Newport. Trans. Linn. Soc., 275 (*trigonopoda*.)

1847.—*Dacetum* Koch. Syst. Myr., 77 & 171 (*capense*).

Because *Heterostoma* Newport is preoccupied (*Heterostoma* Hartmann, Moll., 1843) we must use its synonym, *Dacetum* Koch, instead.

INDIANA UNIVERSITY, June 1, 1888.

NOTES UPON THE SPECIES OF MYRIOPODA SYNGNATHA, DESCRIBED BY THOMAS SAY.*

BY CHARLES H. BOLLMAN.

During the past year, while endeavoring to identify the North American species of myriapods described by early authors, I have spent considerable time studying those described by Mr. Thomas Say, whose only work on our species appeared in the Journ. Acad. Nat. Sci. Phila., for 1821. As my conclusions in several cases in regard to the identification of his species are different from the opinions held by other authors I have deemed it best to embody my views in the form of a paper.

The only types of Say's species that are probably now preserved are those sent by him to Dr. Leach and deposited by the latter gentleman in the British Museum. These specimens were afterwards studied by Newport and Gray, and lately the type of *Cryptops posticus* and the genus *Theatops* have been reëxamined by Mr. R. Innes Pocock.

In the following paper I have marked with an asterisk (*) those species the types of which are now preserved in the collection of the above museum. Of the seventeen species described by Say all except one are good, the names of three, on account of preoccupation, have had to be changed, and six have since been transferred to other genera.

1. *Julus impressus* Say. Journ. Acad. Nat. Sci. Phila., 102, 1821.

Parajulus impressus Bollman. Ann. N. Y. Ac. Sc., 34, 1887.

This species, at first considered to be valid, was afterwards identified by Dr. Wood with his *Julus venustus*. A comparison of these two species shows that they are very different. Besides, *venustus* is not found south of Kentucky, while Say's specimens of *impressus* were from Georgia and Florida, although it ranges north into the region of *venustus* (Connersville, Brookville, and Bloomington, Ind.). This species should now stand as *Parajulus impressus* (Say).

2. *Julus punctatus* Say. Journ. Acad. Nat. Sci. Phila., 102, 1821 (preoccupied by *Julus punctatus* Leach, 1815).

Julus stigmatosus Brandt. Recueil, 88, 1841 (preoccupied by *Julus stigmatosus* Eichwald, Zool. spec., 11, 124, 1830 (= *Strongylosoma pallipes* Olivier)).

*I now regard the old group of Myriopoda as being composed of two utterly distinct divisions, one including the *Paupoda* and *Diplopoda*, to which I have restricted the name of Myriapoda, and the other including the *Syngnatha* as more closely related to the *Hexopoda*, and should be united with it in a distinct class.

Say in naming this species was apparently unacquainted with Dr. Leach's species and used a name which had already been given to another.

In 1841 Brandt attempted to remedy this confusion of names and accordingly called Say's species *Julus stigmatosus*, but even this name, as shown above, is preoccupied.

In accordance with the rules of nomenclature, this name must be changed, and as a tribute to Dr. Say, its original describer and our first American myriopodist, I would call this species *Nemasoma sayanum* Bollman, nom. nov.

- *3. *Julus annulatus* Say. Journ. Acad. Nat. Sci. Phila., 103, 1821.
Spirobolus annulatus Wood. Trans. Amer. Phil. Soc., 212, 1865.
Cambala annulata Cope. Proc. Amer. Phil. Soc., 181, 1869.
Cambala lactarius Gray. Griff. Cuv. Anim. Kingd., Pl. 135, Fig. 2, a, b, c, 1832.

Say's description of this well-known species seems to apply to the southern form, a fact which is strengthened by the locality, "Southern States", which he has assigned to his specimens. This is the species sent to Dr. Leach by Say under the name of *Julus lactarius*, which mistake has confused the synonymy of *Cambala annulata* and *Callipus lactarium*. The name of this species now stands as *Cambala annulata* (Say).

- *4. *Julus lactarius* Say. Journ. Acad. Nat. Sci. Phila., 104, 1821.
Spirostrephon lactarius Brandt. Bull. Sc. St. Pet., 1840; Recueil, 90, 1840.
Cambala lactarius Gervais. Aptères, iv, 134, 1847.
Lysiopetalum lactarium Packard. Amer. Nat., 555, 1883.
Platops lineata Newport. Ann. and Mag. Nat. Hist., 267, 1844.
Lysiopetalum lineatum Gervais. Aptères, iv, 133, 1847.
Reasia spinosa Sager. Proc. Acad. Nat. Sci. Phila., 109, 1856.
Reona chinosa Sager. Cast. Exp. l'Amér. Sud, Pt. vii, 17, 1856.
Lysiopetalum endasum McNeill. Proc. U. S. Nat. Mus., 330, 1887.

This widely distributed and well-known species was made by Brandt the type of his genus *Lysiopetalum*, but as Brandt's genus seems to be identical with the *Callipus* of Risso, the name of our American species must stand as *Callipus lactarius* (Say).

5. *Julus marginatus* Say. Journ. Acad. Nat. Sci. Phila., 106, 1821 (preoccupied by
Julus marginatus Olivier, Encycl. Meth., Ins., vii, 414, 1792 (- *Glomeris marginatus* (Villers).
Spirobolus spinigerus Wood. Proc. Acad. Nat. Sci. Phila., 15, 1864.

A comparison of specimens which have here before been referred to *marginatus* and *spinigerus* with Say's description of this species has convinced me that the *marginatus* of Say and the *spinigerus* of Wood are identical. Say says his specimens are "glabrous," and this is only true in specimens of *spinigerus*, while in our so-called *marginatus* the segments are very densely punctate.

This conclusion is further strengthened by the fact that the species we have referred to *marginatus* is not found in Florida or southern

Georgia, where Say's types were from. If my opinions in regard to these two species are false, the name *marginatus* must at all odds be given up and *Julus america-borealis** of Palis. de Beauvois be used in stead.

This species must now stand as *Spirobolus spinigerus* Wood.

6. *Julus pusillus* Say. Journ. Acad. Nat. Sci. Phila., 106, 1821 (preoccupied by *Julus pusillus* Leach, 1814).
Julus minutus Brandt, Recueil, —, 1841.
Julus sayii Newport. Ann. and Mag. Nat. Hist., 268, 1844.
Julus lineatus McNeill. Proc. U. S. Nat. Mus., 324, 1887 (*Pensacola, Fla.*).
Nemasoma minutum Bollman. Proc. U. S. Nat. Mus., 405, 1888.

As *pusillus* was preoccupied, Brandt, in 1841, proposed the name *minutus* instead. But since this species belongs to the genus *Nemasoma* of Koch it should now stand as *Nemasoma minutum*.

7. *Polydesmus serratus* Say. Journ. Acad. Nat. Sci. Phila., 106, 1821 (*Virginia*).
Polydesmus canadensis Newport. Ann. and Mag. Nat. Hist., 265, 1844 (*Hudson's Bay*).
Polydesmus glaucescens Koch. Syst. Myr., 133, 1847 (*North America*).
Polydesmus pennsylvanicus Koch. Syst. Myr., 123, 1847 (*Pennsylvania*).

This species on account of its rather imperfect description seems to have caused considerable trouble in regard to its identification, European writers considering it the same as *glaucescens* Koch, and closely allied to *complanatus* of Europe, in which they have been correct, while American authors have referred to it another species—the *moniliaris* of Koch. This latter species has the lateral carinæ finely denticulate and the squamiform divisions much elevated, while in *serratus*, according to Say's description, the lateral carinæ have only 3 or 4 denticulations and the squamiform divisions low.

8. *Polydesmus granulatus* Say. Journ. Acad. Nat. Sci. Phila., 107, 1821.
Scytonotus scabricollis Koch. Syst. Myr., 130, 1847.
Scytonotus levicollis Koch. Syst. Myr., 131, 1847.

This well-known species, which was afterwards described as new by Koch and made the type of the genus *Scytonotus*, should now stand as *Scytonotus granulatus* (Say).

9. *Polyænus fasciculatus* Say. Journ. Acad. Nat. Sci. Phila., 108, 1821.

This rare species still retains the name given to it by Say.

Its *habitat* is from Massachusetts to Indian Territory, and it does not seem to be found in the North Central States.

10. *Lithobius spinipes* Say. Journ. Acad. Nat. Sci. Phila., 109, 1821.
Lithobius transmarinus Koch. Gatt. Lith., 33, 1862.
Lithobius mordax Koch. Ibid., 34, 1862.

Spinipes has always been identified by European and American authors with the *Lithobius forficatus* of Linnæus, but on account of the

* *Julus america-borealis* Palis. de Beauvois, Ins. d' Afr. et d' Amér., 155, 1805. This name has been reduced and mutilated by Gervais and other authors to *americanus*.

habitat—"Southern United States"—the number of antennal joints—*thirty*—and the number of scuta with their posterior angles produced—"five or six"—I have regarded *spinipes*, *transmarinus* and *mordax* as identical.

Although there is some doubt as to the exact locality of this species, nevertheless I am strongly inclined to believe that Say's specimens were from the Southern States, for out of the nineteen species noticed by Say, only one is mentioned as occurring north of Virginia, south of which State *forcicatus* does not extend.

This species should still retain Say's name.

*11. *Scolopendra marginata* Say. Journ. Acad. Nat. Sci. Phila., 110, 1821.

This species, the type of which was sent to Dr. Leach, and is now in the British Museum, is identical with the *Scolopendra morsitans* of Linnaeus.

12. *Scolopendra viridis* Say. Journ. Acad. Nat. Sci. Phila., 110, 1821.

Scolopendra punctiventris Newport. List. Myr. Brit. Mus., 5, 1844 (*Florida*).

Scolopendra parva Wood. Proc. Acad. Nat. Sci. Phila., 16, 1864 (*Georgia*).

A valid species.

*13. *Cryptops hyalina* Say. Journ. Acad. Nat. Sci., Phila., 111, 1821 (*Georgia and Florida*).

Cryptops milberti Gervais. Aptères, IV, 592, 1847 (*New Jersey*).

Cryptops asperipes Wood. Proc. Acad. Nat. Sci. Phila., 129, 1867 (*Virginia*).

Cryptops sulcatus Meinert. Proc. Amer. Phil. Soc., 211, 1886 (*Kentucky*).

An examination of a large amount of material has shown that the North American species are the same and identical with the *Cryptops hyalina* of Say.

*14. *Cryptops sexspinosus* Say. Journ. Acad. Nat. Sci. Phila., 12, 1821.

Scolopocryptops 6-spinosus Newport. Trans. Linn. Soc., 107, 1844.

Scolopocryptops sexspinosus Gervais. Aptères, IV, 298, 1847.

Scolopendropsis helvola Koch. Syst. Myr., 175, 1847.

Scolopocryptops georgicus Meinert. Proc. Amer. Phil. Soc., 180, 1886.

This well-known species now stands as *Scolopocryptops sexspinosus* (Say).

*15. *Cryptops posticus* Say. Journ. Acad. Nat. Sci. Phila., 112, 1821 (*Georgia and Florida*).

Theatops postica Newport. Trans. Linn. Soc., 410, 1844 (*based on Say's type*).

Opisthemea postica Wood. Journ. Acad. Nat. Sci. Phila., 35, 1832 (*North Carolina*).

Opisthemea crassipes Meinert. Proc. Amer. Phil. Soc., 209, 1886 (*Florida, Virginia, and Kentucky*).

Theatops crassipes Bollman. Ann. N. Y. Acad. Nat. Sci., 110, 1888 (*Tennessee*).

The type of this species was sent to Dr. Leach and deposited by him in the British Museum. Mr. Newport in 1844 made it the type of his genus *Theatops*, and on account of the possession of ocelli which he assigned to this specimen it has been regarded as different from the

species described by Say. However, a recent examination of type of *Theatops* by Mr. R. Innes Pocock has proven that Newport was wrong as to the specimen having ocelli. Taking this into consideration the synonymy of this species must stand as indicated above and the name as *Theatops posticus* (Say).

*16. *Geophilus rubens* Say. Journ. Acad. Nat. Sci. Phila., 113, 1821.

Geophilus cephalicus Wood. Journ. Acad. Nat. Sci. Phila., 44, 1862.

On account of the difference of coloration assigned by Say and Newport to this species, I do not feel sure of my identification. Say says his specimen is "red," and this would prevent me from identifying *rubens* with *cephalicus*; but Newport, who has examined and described Say's type, which is in the British Museum, concerning the coloration says: "*Saturate aurantiacus, linea mediana duplici nigra e segmento corporis primi ad penultimum ducta.*"

When we take into consideration this peculiar pattern of coloration, the number of pairs of legs (50), and the length of anal pair (*hardly exceeding the preceding*), there is only one known species with which we can possibly identify the *rubens* of Say, and that our common and widely distributed *G. cephalicus* Wood.

That Say's species is a true *Geophilus* is indicated by the following from his description: "*segments with two longitudinal impressed lines.*"

If Say had not mentioned this and no types of his species had been preserved I would hardly hesitate to identify *rubeus* with the *fulva* of Sager or the *bothriopus* of Wood. As it is I cannot see why we should not consider *rubens* and *cephalicus* identical.

17. *Geophilus attenuatus* Say. Journ. Acad. Nat. Sci. Phila., 114, 1821 (*Southern States*).

Geophilus bipuncticeps Wood. Journ. Acad. Nat. Sci. Phila., 45, 1862 (*Illinois, South Carolina*).

Geophilus georgianus Meinert. Proc. Amer. Phil. Soc., 219, 1886 (*Georgia*).

Schendyla? perforatus McNeill. Proc. U. S. Nat. Mus., 325, 1887 (*Pensacola, Fla.*).

Of the seventeen new species described by Say this one is the most inaccurately described and the one which has given me the most trouble in regard to its identification.

Nevertheless when we take into consideration that there are only three species (*lutro*, *bipuncticeps*, and *foveatus*) found in or very near the region in which Say collected, and compare them with Say's description of *attenuatus*, I have found that only one, *bipuncticeps*, agrees in regard to the shape of body and the length of anal legs.

Although most persons would consider *attenuatus* unidentifiable, I think, at least for the present or until more light can be thrown upon Say's species, it is best to regard it the same as *bipuncticeps*.

Besides the above seventeen new species Say has also noticed two others—*Fontaria virginiensis* and *Scutigera forceps*.

The first under the name of *Julus virginiensis* is placed as a note along with *Polyd. serratus*. Concerning this species Say says:

I have found specimens double the usual size in the Southern States. It seems also to vary in only having the second joint of the feet mucronate, and in being destitute of the robust ventral spines between the feet.

Although he may have been right in regard to the identification of his northern specimens, it seems to me as if his southern specimens belonged to *Fontaria crassicutis* (Wood).

Scutigera forceps is mentioned after *Lithobius spinipes* under the name of *Cermatia coleoptrata*. His identification of our species with the European is wrong, although there is considerable resemblance between the two.

INDIANA UNIVERSITY, March 9, 1889.

NOTES UPON THE NORTH AMERICAN MYRIAPODS DESCRIBED BY

C. L. KOCH.

BY CHARLES H. BOLLMAN.

As Dr. Koch's papers* relating to the North American myriapods seem to have been overlooked by previous authors, I have thought it best to bring together in a paper my notes relating to his species.

The second of Dr. Koch's works is merely a more extended account of the species mentioned in his first work, with plates of each.

Of the fourteen new species described by Koch only five are good. I desire to express my thanks to Dr. Lucien M. Underwood, of Syracuse, N. Y., for the privilege of examining a copy of Koch's "Die Myriapoden."

1. *Spirostreptus nutans* Koch. Syst. Myr., 104, 1847 (*North America*); Die Myr., I, 14, pl. 7, fig. 14, 1863.

As the descriptions and figures of this species plainly show, it should be referred to *Parajulus canadensis* (Newport).

2. *Spirostreptus clavipes* Koch. Syst. Myr., 105, 1847 (*Pennsylvania*); Die Myr., II, 103, pl. 115, fig. 226, 1863.

This species, described from a male specimen, is identical with the preceding. The differences Koch draws between them are sexual. His figure of the first pair of legs seems to indicate that his specimens were not full grown.

3. *Campodes flavicornis* Koch. Syst. Myr., 126, 1847 (*Pennsylvania*); Die Myr., II, 17, pl. 68, fig. 140, 1863.

This species, the type of the genus *Campodes*, has been well described by Koch. It is the same as *Spirostrephon casioannulatus* Wood and the *Pseudotremia vudii* of Cope. *Campodes* Koch (= *Cryptotrichus* Packard).

4. *Campodes fuscicornis* Koch. Syst. Myr., 127, 1847 (*Pennsylvania*); Die Myr., II, 16, pl. 68, fig. 139, 1863.

This new species, as Koch has hinted, "Vielleicht nur Abart der vorigen," is only a slight color variety of the preceding, and is not worthy of specific or subspecific rank.

5. *Scytonotus scabricollis* Koch. Syst. Myr., 130, 1847 (*Pennsylvania*); Die Myr., II, 41, pl. 80, fig. 165, 1863.

* 1847. System der Myriapoden.
1863. Die Myriapoden I, II.

This species, the type of the genus *Scytonotus*, is identical with the *Polydesmus granulatus* of Say.

6. *Scytonotus lævicollis* Koch. Syst. Myr., 131, 1847 (*North America*); Die Myr., II, 41, pl. 80, fig. 163, 1863.

The only differences Koch makes between this and the preceding species is in the number of rows of scale-like tubercules on the first dorsal plate, *one* instead of *three*. This character is utterly worthless, as the scales on the first dorsal plate vary in number and are sometimes almost obliterated. On account of this variation his *lævicollis* is the same as *scabricollis*, and hence identical with Say's *granulatus*.

7. *Scytonotus nodulosus* Koch. Syst. Myr., 131, 1847 (*Pennsylvania*); Die Myr., II, 43, pl. 80, fig. 164, 1863.

This species, which seems to be valid, bears, in its general appearance, a resemblance to *Polydesmus*, but the position of the repugnatorial pore excludes it from that genus. It can not be the *Scytonotus setiger* of Wood, because the latter species has the squamation more like that of *granulatus*, and not as in *Polydesmus*. His figures of the first dorsal plate do not agree in regard to the position of the anterior row of tubercules; one shows them along and inside the anterior margin, as no doubt they are, while the other represents them as placed on the margin and appearing as sharp and deep serrations.

8. *Polydesmus glaucescens* Koch. Syst. Myr., 133, 1847 (*North America*); Die Myr., I, 59, pl. 26, fig. 51, 1863.

This is identical with the *Polydesmus serratus* of Say.

9. *Polydesmus pennsylvanicus* Koch. Syst. Myr., 133, 1847 (*Pennsylvania*); Die Myr., II, 18, pl. 69, fig. 142, 1863.

Probably identical with *serratus*. It differs in having four scale-like tubercules in the first row. Koch may have drawn his figure from one of the ultimate segments, and this will account for the larger number of scales. On the ultimate segments of *serratus* there is occasionally a tendency for four scales in the first row.

Pennsylvanicus can not be the same as *P. branneri* Bollman, for the latter has so far only been found in the Tennessee mountains. Several Italian authors have recorded specimens of *pennsylvanicus* from northern Italy, but this is no doubt due to an erroneous identification.

10. *Polydesmus moniliaris* Koch. Syst. Myr., 135, 1847 (*Pennsylvania*); Die Myr., II, 20, pl. 69, fig. 143, 1863.

A valid species. It is the same as the *Polydesmus serratus* of Wood.

11. *Euryurus maculatus* Koch. Syst. Myr., 138, 1847 (*? habitat*); Die Myr., I, 7, pl. 3, fig. 8, 1863.

According to Peters, who has probably examined the type specimen, *maculatus* is the same as *Euryurus erythropygus* (Brandt). In this view he seems to be correct, for I can find no difference between the description of *maculatus* and specimens of *erythropygus*.

12. *Fontaria virginiensis* Koch. Syst. Myr., 141, 1847 (*North America*); Die Myr., I. 71, pl. 32, fig. 62, 1863.

The specimens Koch has referred to the *Julus virginiensis* of Drury do not belong to that species, but seem to be very close, if not identical, with *Fontaria butleriana* Bollman from Indiana. His figures represent a distinct, narrow, yellow band along the posterior margin of the segments as in the latter species.

13. *Fontaria coriacea* Koch. Syst. Myr., 141, 1847 (*Virginia*); Die Myr., I. 72, pl. 32, fig. 63, 1863.

A valid species of which *Polydesmus corrugatus* Wood is a synonym. His specimens have a yellow band along the posterior margin of the segments as is the case in the eastern specimens of *coriacea*.

14. *Fontaria oblonga* Koch. Syst. Myr., 142, 1847 (*Pennsylvania*); Die Myr., I. 73, pl. 32, fig. 64, 1863.

A valid species belonging to the same group as *castanea*, *tennesseensis*, and *pulchra*, and perhaps closely allied to the latter, from which it is separated by the superior position of the repugnatorial pore. Koch's specimens, as indicated by the color, were probably not full grown.

15. *Scolopendropsis helvola* Koch. Syst. Myr., 175, 1847 (*North America*); Die Myr., II, 34, pl. 76, fig. 156, 1863.

Identical with *Scolopocryptops sexspinosus* (Say). From this and two other species Koch has redescribed it seems as if he was unaware of Say's paper on the North American Myriapods.

INDIANA UNIVERSITY, March 15, 1887.

CLASSIFICATION OF THE MYRIAPODA.

BY CHARLES H. BOLLMAN.

In this paper I have given keys for the determination of all groups above species. When a genus has been so inaccurately described that it could not be introduced into the key without affecting the natural order of genera, I have placed it, with its short diagnosis, as a footnote.

On account of the great difference between the two principal orders of the old group of Myriapoda, as has been recently shown by Pocock, Kingsley, and several continental writers, I have regarded the old group as forming two distinct divisions: One, the *Syngnatha*, as being more closely related to the Hexapoda, and should be united with it to form one class;* the other, the *Diplopoda* and *Pauropoda* † as forming another class, to which I have restricted the name of Myriapoda. I have regarded the *Julidæ* and their allies as being the oldest group on account of the following facts:

(1) That they are the only group of which we have any geological evidence.

(2) That they have more segments than other groups, thus showing less specialization (the 3-footed condition of the young is due to the amount of food-yolk and not to any ancestral form.)

(3) That they have simple tracheæ.

The Myriapoda may be divided into the following subclasses:

- a. Antennæ simple, not ramose, 5-8 jointed; some or nearly all of the segments with two pairs of legs; pairs of legs 13 or more..... DIPLOPODA.—A.
- aa. Antennæ ramose, bearing 3 long, jointed appendages; none of the segments with 2 pairs of legs; pairs of legs, 9 MONOPODA.†—B.

Subclass A.—DIPLOPODA.

This subclass contains the following two superorders:

- a. Anus situated in ultimate segment; maxillæ forming a plate; body not ornamented with fasciculæ of hairs; copulatory feet present... CHILOGNATHA.—I.
- aa. Anus situated in the penultimate segment; maxillæ subpediform, not forming a plate; body ornamented with fasciculæ of hairs; copulatory feet absent.

PODOCHILA.‡—II.

* For this class I propose the name *Etymochila* (*ετυμος*, true; *χιλος*, lip), on account of the fact that it is the only group of Arthropoda which has a true *labium*. The *Syngnatha* and *Hexapoda* are considered as subclasses.

† I have considered the *Pauropoda* as being more closely allied to the *Diplopoda* on account of the anterior position of the genital opening, the form and position of the copulatory appendix at base of second pair of legs as in the *Polyxenidæ*, and the general make-up of the body.

‡ MONOPODA.—I propose this new subclass for the reception of the *Pauropoda*.

§ PODOCHILA.—I propose this new superorder for the reception of the *Polyxenidæ*. Pocock ranked this family as a subclass, but I think its relations to the *Chilognatha* are too close to admit of so high a rank.

Superorder I.—CHIOLOGNATHA.

This division is divisible into the following orders:

- a. Copulatory organs of male formed by a transformation of one or both pairs of legs of seventh segment; alimentary tract straight; tracheæ simple.
- b. Mandibles and gnathochilarium rudimentary; labrum sinuate; mouth parts more or less suctional..... COLOBOGNATHA.—I.
- bb. Mandibles and gnathochilarium not rudimentary; labrum tridentate; mouth parts not suctional..... HELMINTHOMORPHA.—II.
- aa. Copulatory organs of male formed by accessory pairs of legs, situated at the posterior part of body; labrum sinuate or unidentate; alimentary tract bent; tracheæ branched..... ONISCOMORPHA.—III.

Order I.—COLOBOGNATHA.

This order contains the following family:

Family I.—POLYZONIIDÆ.

Analysis of the subfamilies of Polyzoniidæ.

- a. Gnathochilarium represented by an acute triangular plate; dorsal plates not sulcate; lateral carinae not well developed.
- b. Body filiform, pilose; ocelli absent; anal scale present; antennæ strongly clavate; mouth parts strongly suctional..... SIPHONOPHORINÆ.—I.
- bb. Body wide and depressed, not pilose; ocelli present; anal scale absent; antennæ not strongly clavate; mouth parts less suctional.
POLYZONINÆ.—II.
- aa. Gnathochilarium well developed, subsimilar to that of the *Julidæ*; dorsal plates sulcate and covered with numerous short stiff hairs; lateral carinae well developed.
- c. Body filiform; mentum rectangular; hypostoma not well developed; anal scale absent; segments not tuberculate..... ANDROGNATHINÆ.—III.
- cc. Body wide, depressed; mentum hammer-shaped; hypostoma well developed; anal scale present; segments tuberculate..... PTATYDESMINÆ.—IV.

Subfamily I.—SIPHONOPHORINÆ.

Includes the genus *Siphonophora* Brandt, which is distinguished by the characters given for the subfamily.

Subfamily II.—POLYZONINÆ.

*Analysis of the genera of Polyzoniina.**

- a. Anterior margin of first dorsal plate emarginate, not concealing the ocelli.
OCTOGLENA Wood.
- aa. Anterior margin of first dorsal plate rounded, advanced forward to the base of the antennæ, concealing nearly all the ocelli..... POLYZONIUM† Brandt.

* *Siphonotus* Brandt. Bull. Sc. Acad. St. Petersb., 1836. This genus probably belongs to this subfamily. It has two ocelli as in *Polyzonium*, but the antennæ are sub-similar in form to that of *Geophilus*.

† *Polyzonium* (= *Platylus* Gervais, = *Leiosoma* Victor, = *Petaserpes* Cope, = *Pies-todesmus* Fanzago, = *Hirudisoma* Fanzago, = *Heraglena* McNeill. Proc. U. S. Nat. Mus., 328, 1887).

Subfamily III.—ANDROGNATHINÆ.*

Analysis of the genera of Andrognathinae.

- a.* Fifth segment normal; pores not raised on a pedicel DOLISTENUS Fanzago.
aa. Lateral carinæ of fifth segment deeply emarginate; the repugnatorial pores raised on a pedicel, the first placed on the anterior lobe of fifth segment, rest on posterior border of other segments ANDROGNATHUS Cope.

Subfamily IV.—PLATYDESMINÆ.

Analysis of the genera of Platydesminæ.

- a.* Dorsal plates with two large median tubercles, anterior with smaller ones.
 PSEUDODESMUS Pocock.
aa. Dorsal plates with two transverse rows of small smooth tubercles.
 PLATYDESMUS† Lucas.

Order II.—HELMINTHOMORPHA.

This order is divisible into the following suborders:

- a.* Cardio of mandibles and promentum of gnathochilarium present; segments 30 or more IULUIDÆ.—I.
aa. Cardio of mandibles absent; promentum of gnathochilarium absent; segments 20 or 21; copulation foot of male formed from the anterior pair of seventh segment POLYDESMOIDEÆ.—II.

Suborder I.—IULUIDÆ.

This suborder is divisible into the two following superfamilies:

- a.* Copulation foot of male formed from both pairs of legs of seventh segment; cardio of gnathochilarium single JULOIDÆ.—I.
aa. Copulation foot of male formed from the anterior pair of legs of seventh segment; cardio of gnathochilarium double CALLIPODOIDÆ.‡—II.

Superfamily I.—Juloidæ.

This contains the following families:

- a.* Repugnatorial pores present; anal segment rounded or produced into a spine (ovaries surrounded by a common membrane) JULIDÆ.—II.
aa. Repugnatorial pores absent; anal segment produced into two slender papillæ or unidentate (ovaries not surrounded by a common membrane).
 CRASPEDOSOMIDÆ.§—III.

**Andrognathinae* (= Family *Andrognathidae* Cope. Proc. Amer. Phil. Soc., 182, 1869).†*Platydesmus* Lucas (= *Piestodesmus* Lucas, = *Brachycybe* Wood).‡After comparing Risso's description of *Callipus* several times with specimens of *Lysiopetalum* I have failed to see why it should not be considered the same as *Lysiopetalum*. Since *Lysiopetalum* is a synonym of *Callipus*, the family and superfamily names must be made to agree with *Callipus*.§ *Craspedosomida* (= in part *Craspedosomada* Gray, 1842). As this name is based on the oldest genus and besides is older than Koch's German name, *Chordeumiden*, it must be used in place of the latter.

Family II.—JULIDÆ.

Analysis of the subfamilies of Julida.

- a. Gnathochilarium stipes separated by the promentum; mentum entire, touching promentum; spatula absent.
 - b. None of the anterior segments apodous, 1, 2, 3, 4 each with a pair of legs; gnathochilarium stipes smaller than promentum; cardo absent; mandibular combs 10 (9); antennæ short and thick.....SPIROBOLINÆ.—V.
 - bb. Fourth segment apodous, 1, 2, and 3 (except in *Glyphiulus*) each with a single pair of legs; gnathochilarium stipes larger than promentum; cardo present; antennæ not short and thick.
 - c. Promentum entire; mandibular combs 8-10.....SPIROSTREPTINÆ.—VI.
 - cc. Promentum divided; mandibular combs (5) 6-7.....CAMBALINÆ.—VII.
- aa. Gnathochilarium stipes not separated by the promentum; mentum bipartite, not touching the promentum, which is small and separate 1 from the mentum by the stipes; spatula present; third segment apodous.
 - d. Mandibular combs 10 (9); second pair of legs dwarfed; ♂ promentum, first segment and first pair of legs (6-jointed) very large.
 - PARAJULINÆ.—VIII.
 - dd. Mandibular combs 4.
 - e. Only the ventral plates of the first and second segments free; ♂ genital ducts opening through the coxæ of second pair of legs....JULINÆ.—IX.
 - ee. All the ventral plates free; ♂ genital ducts not opening through the coxæ of second pair of legs.....NEMASOMINÆ.—X.

Subfamily V.—SPIROBOLINÆ.

This subfamily contains the genus *Spirobolus** Brandt.

Subfamily VI.—SPIROSTREPTINÆ.

Analysis of the genera of Spirostreptina.

- a. Segments without carinae or spinelike warts.
 - b. Repugnatorial pores beginning on the sixth segment; mandibular combs 10.
 - SPIROSTREPTUS† Brandt.
 - bb. Repugnatorial pores beginning on the fifth segment; mandibular combs 8.
 - ALLOPORUS Porath.
- aa. Segments with carinae or spinelike warts.
 - c. Third segment with a single pair of legs.
 - d. Ocelli in a single series; segments with 20 rows of spinelike warts, first dorsal plate carinatedTRACHYJULUS Peters.
 - dd. Ocelli in about 9 rows; segments with about 8 rows of spinelike warts, first dorsal plate smoothACANTHIJULUS Gervais.
 - cc. Third segment with two pairs of legs; ocelli in many series; segments with 10-11 rows of spinelike warts, first carinated.....GLYPHIULUS Gervais.

* *Analysis of subgenera of Spirobolus.*

- a. Dorsal part of segments without scobinaSPIROBOLUS, s. str.
- aa. Dorsal part of all or nearly all the segments with scobina.....RHINOCRINUS.

† *Analysis of subgenera of Spirostreptus.*

- a. Anal valves without a sharp or blunt spine which passes beyond anal segment.
 - SPIROSTREPTUS, s. str.
- aa. Anal valves with a sharp or blunt spine which passes beyond anal valves.

The subgenus *Nodopyge* Brandt, according to the rules of nomenclature, must give way to *Spirostreptus*.

ODONTOPYGE Brandt.

Subfamily VII.—CAMBALINÆ.

Analysis of the genera of Cambalinae.

- a. Segments carinated; ocelli in a single series; first pair of legs of male 6-jointed, unarmed CAMBALA Gray.
- aa. Segments not carinated; ocelli in several series.
- b. First pair of legs of male 7-jointed; mandibular combs 6 (5); transverse suture of segments with circular depressions NANNOLENE Bollman.
- bb. First pair of legs of male 4-jointed; mandibular combs 7.
- JULOMORPHIA Porath.

Subfamily VIII.—PARAJULINÆ.

This subfamily includes the American genus *Parajulus* Humbert & Saussure.

Subfamily IX.—JULINÆ.

Analysis of the genera of Julinae.

- a. Ocelli, if present, more than 1 or 2.
- b. First pair of legs of male 5-jointed, first tarsi lobed.
- c. Antennæ and legs long; ocelli always in 3 series (*species large*).
PÆROMOPUS* Karsch.
- cc. Antennæ and legs short; ocelli none or in several series (*species small*).
BLANIULUS Gervais.
- bb. First pair of legs of male 3-jointed, very small and strongly hooked, tarsi never lobed; ocelli absent or in many series JULUST Linnæus.
- aa. Ocelli represented by 1 or 2 large ones on each side of the head.
STEMMIULUS Gervais.

Subfamily X.—NEMASOMINÆ.

Embraces the genus *Nemasoma* Koch.

Family III.—CRASPEDOSOMIDÆ.

Analysis of the subfamilies of Craspedosomida.

- a. Anal segment with two long slender papillæ; dorsal plates without large carinæ.
- b. Both pairs of legs of seventh segment of male transformed into a copulatory organ; pairs of legs ♂ 48, ♀ 50 CRASPEDOSOMINÆ.—XI.
- bb. Both pairs of legs of seventh and the anterior pair of eighth segment transformed into copulatory organs CAMPODINÆ.—XII.
- bbb. Both pairs of legs of seventh segment, including the posterior pair of sixth and anterior pair of eighth segment, transformed into a copulatory organ; pairs of legs ♂ 45, ♀ 49; body strongly juliform; lateral carinæ absent; setigerous tubercles only developed on the posterior segments.
CHORDEUMINÆ.—XIII.
- aa. Anal segment without slender papillæ, strongly unidentate; dorsal plates with about 12 large carinæ, between which are small tubercles; legs short; entire body and legs granulated STRIARINÆ.—XIV.

* Karsch's definition of this genus is so short that I doubt if it belongs to this subfamily.

† *Julus* (= *Mesoiulus* Berlese). Berlese has divided *Julus* into six subgenera, but it seems to me that they are unworthy of their rank.

Subfamily XI.—CRASPEDOSOMINÆ.

Analysis of the genera of Craspedosominæ.

a. Lateral carinæ large.

b. Lateral carinæ bent downwards; segments convex above, concave beneath.

RHISCOSOMA Latzel.

bb. Lateral carinæ horizontal; segments flat above, convex beneath.

ATRACTOSOMA Fanzago.

aa. Lateral carinæ absent or very weak; setigerous tubercles well developed.

CRASPEDOSOMA* Leach.

Subfamily XII.—CAMPODINÆ.

Analysis of the genera of Campodina.

a. Dorsal plates marked with sharp narrow carinæ; under parts deeply reticulated; lateral carinæ distinct.....BRANNERIA† Bollman.

aa. Dorsal plates never carinated; under parts lightly reticulated.

b. Anterior pair of legs of eighth segment of male 5-jointed.

c. Back not scaly; setigerous tubercles almost absent; segments almost circular; legs rather short; second article of eighth pair of legs of male stout, last armed with a claw.....CAMPODES; Kochl

cc. Back scaly, depressed; setigerous tubercles — — —; legs long; second article of eighth pair of legs of male slender, last not armed with a claw.....PSEUDOTREMIA Cope.

bb. Anterior pair of legs of eighth segment of male 2-jointed; setigerous tubercles well developed.....SCOTERPES § Cope.

Subfamily XIII.—CHORDEUMINÆ.

Includes the European genus *Chordeuma* Koch.

Subfamily XIV.—STRIARIINÆ.

Includes the American genus *Striaria* Bollman.

Superfamily II.—Callipodoidæ.

This superfamily only includes the following family:

* *Analysis of subgenera of Craspedosoma.*

a. Ocelli absent.....HAASIA, subgen. nov.

aa. Ocelli present.....CRASPEDOSOMA, s. str.

Haasia is named in honor of Dr. Erich Haase, of Berlin, Germany. This subgenus contains *Crasp. troglodytes* Latzel and *Crasp. mamillatum* Haase, both of which are European species.†*Branneria*, gen. nov. Type: *Craspedosoma carinatum* Bollman. Ann. N. Y. Acad. Nat. Sci., 108, 1888 (*Mossy Creek, Tenn.*). It is easily separated from its relatives by the character of the dorsal plates and the large lateral carinæ. I have put it in this subfamily on the supposition that all the American genera belong here. Named after Dr. J. C. Branner, State geologist of Arkansas.‡*Campodes*(=*Pseudotremia* (in part)=*Cryptotrichus* Packard).§*Analysis of the subgenera of Scoterpes.*

a. Ocelli absent.

b. Eighth pair of legs of male ending in a claw.....SCOTERPES.

bb. Eighth pair of legs of male not ending in a claw.....ZYGONOPUS.

aa. Ocelli present; eighth pair of legs of male not ending in a claw.

TRICHOPFTALUM.

Family IV.—CALLIPODIDÆ.

Includes the genus *Callipus* of Risso.

Suborder II.—POLYDESMOIDEA.

Contains the following families:

- a. Pleural and ventral plates, except those of the two anterior segments, not free; segments 19 or 20; pairs of legs (♂) 28 or (♀) 29, or (♂) 30 or (♀) 31.

POLYDESMIDÆ.—V.

- aa. Pleural and ventral plates free; segments 21; pairs of legs 32; shape of body as in the *Glomeridæ*.....GLOMERIDESMIDÆ.*—VI.

Family V.—POLYDESMIDÆ.

This family is divisible into two subfamilies:

- a. Body elongate, contractile into a spire; lateral carinæ never strongly depressed.

POLYDESMINÆ.—XV.

- aa. Body short, very convex, contractile into a ball; carinæ strongly depressed.

SPHERIODESMINÆ.—XVI.

Subfamily XV.—POLYDESMINÆ.

Analysis of the genera.

- a. Repugnatorial pores placed on the 5, 7, 9, 10, 12, 13, 15–19 segments.

- b. Femora of legs not spined.

- c. A swelling around the repugnatorial pore.

- d. Anal segment more or less sharp.

- e. Dorsal plates with a longitudinal sulcus, smooth; lateral carinæ small; body narrow.

- f. Body strongly julid; lateral carinæ rudimentary or line-like; anal segment decurved.....STRONGYLOSOMA Brandt.

- ff. Body less julid; lateral carinæ very plain; anal segment with the end excised.....ORTHOMORPHA† Bollman.

- ee. Dorsal plates not distinctly sulcate; smooth or scaly; lateral carinæ large; body wide.

- g. Back convex.

- h. Dorsal plates smooth; lateral carinæ not serrate.

LEPTODESMUS‡ Saussure.

- hh. Dorsal plates rough; lateral carinæ very large and the margins serrate.

ODONTOTROPIS Humb. and Sauss.

- gg. Back flat.

- i. Repugnatorial pores placed on the upper part of lateral carinæ.

RHACIS Saussure.

- ii. Repugnatorial pore placed on the lateral margin of carinæ.

- k. Repugnatorial pore surrounded by a round swelling.

- l. Segments with a few indistinct tubercles along the margins (species white).....CHETASPIS Bollman.

* If Gervais's statements and figures of *Glomeridesmus porcellus* are true it should represent the type of a new family. It combines a few characters of the *Polydesmida* and *Glomerida*, under the latter of which Gervais placed it.

† *Orthomorpha* Bollman for *Paradesmus* Saussure, which is preoccupied.

‡ As *Oxyurus* Koch is preoccupied, *Leptodesmus* Saussure must be used instead.

Subfamily XVI.—SPHÆRIODESMINÆ.

Analysis of the genera.

- ca. The fourth and fifth dorsal plates largest; some of the posterior with a row of tubercles.....SPHÆRIODESMUS Peters.
- aa. The third and fourth dorsal plates largest; dorsal plates tuberculated.
CYPHODESMUS Peters.
- aaa. The third dorsal plate largest; dorsal plates smooth.
CYCLODESMUS Humb. and Sauss.
- aaaa. The second dorsal plate largest.
- b. Anal segment small.....ONISCODESMUS Gervais and Goudot.
- bb. Anal segment large as in the *Glomeridæ*.....CYRTODESMUS Gervais.

Order III.—ONISCOMORPHA.

This order contains the family *Glomeridæ*, which is related to the preceding family.

Family VII.—GLOMERIDÆ.

Analysis of the subfamilies of Glomeridæ.

- a. Segments 13; pleural plates 11 or 12; pairs of legs ♀ 21, ♂ 23; ocelli in more than one series.....SPHÆROTHERIINÆ.—XVII.
- aa. Segments 11 or 12; pleural plates 10; pairs of legs ♀ 17, ♂ 19; ocelli in a single series.....GLOMERIINÆ.—XVIII.
- aaa. Segments 9; antennæ 5-jointed; ocelli in several series...OLIGASPIINÆ.*—XIX.

Sub-family XVII.—SPHÆROTHERIINÆ.

Analysis of the genera of Sphærotheriina.

- a. Antennæ 7-jointed, the sixth joint smaller than the fifth.SPHÆROTHERIUM Brandt.
- aa. Antennæ 6-jointed, the sixth much larger than the fifth.....ZEPHRONIA Gray.

Subfamily XVIII.—GLOMERIINÆ.

Analysis of the genera of Glomeriina.

- a. Mentum bipartite; dorsal plates smooth, not marginate.
- b. Copulation feet of the male 5-jointed, ending in a simple, weak, crooked joint, which bears a short and thick bristle; 12 dorsal plates plainly developed.
GLOMERIS Latreille.
- bb. Copulation foot of male 3-jointed, ending in a shear or forceps-like piece, which does not bear a bristle; only 11 dorsal plates plainly developed.
LATZELIA † Bollman.
- aa. Mentum entire; dorsal plates warty and scaly, their borders strongly margined.
GERVAISIA Waga.

Subfamily XIX.—OLIGASPIINÆ.

Contains the South-African genus *Oligaspis* Wood.

* If Wood's description of the genus *Oligaspis* is correct it should represent a new subfamily. As shown by the figures his types are adult specimens.

† *Latzelia* gen. nov. Type: *Glomeris minima* Latzel. I have named this new genus after Dr. Robert Latzel, of Vienna, the illustrious Austrian myriapodist, and the describer of *Glomeris minima*.

Superorder II.—PODOCHILA.

This division embraces the following:

Order IV.—PSELAPHOGNATHA.

Family VIII.—POLYXENIDÆ.

This family includes the cosmopolitan genus *Polyxenus*.

Subclass B.—MONOPODA.

This subclass includes the

Order V.—PAUROPODA.

Family IX.—PAUROPODIDÆ.

This family is divisible into two subfamilies.

- a. Segments depressed, sculptured; legs short, not or scarcely extending beyond sides of body; (brownish; motions slow)EURYPAUROPODINÆ.—XX.
- aa. Segments not depressed nor sculptured; legs longer, extending beyond sides of body (pale, motions agile).....PAUROPODINÆ.—XXI.

Subfamily XX.—EURYPAUROPODINÆ.

Analysis of the genera.

- a. Dorsal plates 10; large lateral hairs on 2, 4, 7, 9, (10♀) segments.
Brachypauropus Latzel.
- aa. Dorsal plates 7; large lateral hairs on 2, 3, 4, 5, 6 segments.
Eurypauropus Ryder.

Subfamily XXI.—PAUROPODINÆ.

Includes the genus *Pauropus* Lubbock.

INDIANA UNIVERSITY, April 3, 1884

CLASSIFICATION OF THE SYNGNATHA.*

BY CHARLES H. BOLLMAN.

In accordance with the views recently advanced by Pocock, Kingsley, and several continental writers, I have regarded the *Syngnatha* as being more closely allied to the *Hexapoda* than to any orders of the old group of *Myriapoda*. For the class including the *Syngnatha* and *Hexapoda*, I propose the name *Etymochila*, in reference to the fact that they are the only two groups which have a true labium. I have arranged the following classification according to an ascending series. My reasons for placing the *Lithobiidæ* lowest are as follows:

1 (a) According to the investigations of Haase, in *Lithobius*, *Henicops*, *Cryptops*, and in young specimens of *Scolopendra* and *Dacetum*, the spiracles are characterized by a feeble margin, a shortish cone, no closing apparatus, and by the separate apertures of the tracheæ.

(b) That in the *Geophilidæ* and *Scolopendridæ* the tracheal system is most highly developed.

2. In the distribution of the genera of ANAMORPHA (*Henicops*, *Lithobius*, and *Scutigera*) we see indications of their oldness, while in the distribution of a large number of genera of EPIMORPHA we observe that they are confined to small areas and not cosmopolitan as the others.

Although the *Epimorpha* may have the highest development of a tracheal system, nevertheless in many points the *Geophilidæ* show indications of a degenerate family.

Class ETYMOCHILA.

Subclass I.—SYNGNATHA.

A comparison of the characters of the *Epimorpha* and *Anamorpha* of Meinert shows that his divisions should have the rank of orders. They may be characterized as follows:

- a. Pairs of legs 15; coxæ large; females with external genital armature; hindgut straight; young born with seven pairs of legs ANAMORPHA.
aa. Pairs of legs always more than 21; coxæ small; females without external genital armature; hind gut bent; young born with as many pairs of legs as adult

EPIMORPHA.

*Since *Syngnatha*, as defined by Leach, is an older name than the *Chilopoda* of Latreille, it should be used instead of the latter.

Order I.—ANAMORPHA.

This order, although the *Cermatobiidæ* tend to form a connecting link, may be divided into two suborders:

- a. Spiracles in two series, lateral, with strong chitinous walls; eyes not truly faceted; coxæ of prehensorial legs joined and armed with teeth; maxillary palpus 3-jointed, armed with a claw, joints without spines; dorsal plates distinctly 15; antennæ not multiarticulate; tarsi not or a few of the last multiarticulate; claw of female genitalia with basal spines..... UNGUIPALPI.
- aa. Spiracles in one series, 6, dorsal, without strong chitinous walls; eyes faceted; coxæ of prehensorial legs not distinctly coalesced, armed with long spines; maxillary palpus 4-jointed, unarmed, joints with long spines; dorsal plates 8, rest reduced to mere rudiments; antennæ and legs multiarticulate; claw of female genitalia without basal spines..... SCHIZOTARSIA.

Suborder I.—UN. UIPALPI.

Analysis of families.

- a. Tarsi of all legs triarticulate; spiracles strictly lateral..... LITHOBIIDÆ.—I.
- aa. Tarsi not all triarticulate; spiracles somewhat dorsal..... CERMATOBIIDÆ.—II.

Family I.—LITHOBIIDÆ.

Analysis of genera.

- a. Labrum unidentate; a single large ocellus on each side of head; legs unarmed.
HENICOPS Newport.
- aa. Labrum tridentate; ocelli absent or more than one; legs armed with spines.
LITHOBIUS* Leach.

Family II.—CERMATOBIIDÆ.

Contains the East Indian genus *Cermatobius* Haase.

Suborder II.—SCHIZOTARSIA Brandt.

Includes the following family:

Family III.—SCUTIGERIDÆ.

Includes the cosmopolitan genus *Scutigera* Lamarck.

Order II.—EPIMORPHA Meinert.

Analysis of families.

- a. Pairs of legs 21 or 23; antennæ more than 14-jointed; pairs of spiracles 9, 10, or 19; anal pleuræ large, scutelliform..... SCOLOPENDRIDÆ.—IV.
- aa. Pairs of legs never less than 30; antennæ 14-jointed; pairs of spiracles two less than pairs of legs; anal pleuræ coxiform..... GEOPHILIDÆ.—V.

* *Analysis of subgenera of Lithobius.*

- a. Posterior angles of none of the dorsal plate produced..... ARCHILITHOBIUS.
- aa. Posterior angles of the 11 and 13 dorsal plates produced..... HEMILITHOBIUS.
- aaa. Posterior angles of the 9, 11, and 13 dorsal plates produced.
- b. Coxæ of last four legs with pores..... LITHOBIUS.
- bb. Coxæ of last five legs with pores..... PSEUDOLITHOBIUS.
- aaaa. Posterior angles of the 7, 9, 11, and 13 dorsal plates produced..... NEOLITHOBIUS.
- aaaaa. Posterior angles of the 6, 7, 9, 11, and 13 dorsal plates produced.
EULITHOBIUS.

Family IV.—SCOLOPENDRIDÆ.

Analysis of subfamilies.

a. Pairs of legs 21.

b. Tarsi, except anal, biarticulate; pairs of spiracles 19; ocelli absent.

PLUTONIINÆ.—I.

bb. Tarsi, except last two, biarticulate; pairs of spiracles 10; ocelli absent or single.....CRYPTOPINÆ.—II.

bbb. All the tarsi triarticulate; pairs of spiracles 9 or 10; ocelli 4.

SCOLOPENDRINÆ.—III.

aa. Pairs of legs 23; tarsi, except the last two, biarticulate; pairs of spiracles 10; ocelli absent or present.....SCOLOPENDROPSINÆ.—IV.

Subfamily I.—PLUTONIINÆ.

Contains the European genus *Plutonium* Cavanna.

Subfamily II.—CRYPTOPINÆ.

Analysis of genera.

a. Last dorsal plate normal; anal legs not crassate.

b. Ocelli absent.....CRYPTOPS Leach.

bb. Ocelli present, single.....EREMOPS* Bollman.

aa. Last dorsal plate twice as large as preceding; anal legs short and thick; ocelli absent.....THEATOPS Newport.

Subfamily III.—SCOLOPENDRINÆ.

Analysis of genera.

a. Pairs of spiracles 9.

b. Spiracles not branchiform.

c. Claw of maxillary palpus simple, unarmed; anal pair of legs short and crassate.....ASANADA Meinert.

cc. Claw of maxillary palpus armed on the inner side with two teeth.

d. Claw of anal pair of legs not crenulate beneath.

e. Cephalic plate subcordiform, usually partly covering first dorsal plate.

SCOLOPENDRA† LINNÆUS.

ee. Cephalic plate more or less round or quadrate; partly concealed by first dorsal plate.....CORMOCEPHALUS Newport.

dd. Claw of anal legs crenulate.....RHODA Meinert.

bb. Spiracles branchiform.

f. Claw of maxillary palpus armed on the inner side with a long acute tooth; anal pair of legs normal.....OTOSTIGMA Porath.

ff. Claw of maxillary palpus armed on the inner side with two long acute teeth; anal pair of legs not normal.

g. Tarsi of anal pair of legs very much depressed..EUCORYBAS Gerstücker.

gg. Anal legs short and thick but the tarsi not flattened.

CUIPIPES Kohlrausch.

* *Eremops*, Nom. gen. nov. for *Monops* Gervais, which is preoccupied.† *Scolopendra* may be divided into two subgenera.a. Only the femora of anal pair of legs with spines.....*Scolopendra*, s. str.aa. Femora of more than anal pair with spines.....*Collaria* Porath.

aa. Pairs of spiracles 10.

h. Anal pair of legs normal.

i. First spiracle suboval.....RHYSIDA* Wood.

ii. First spiracle trema-shaped.....TREMATOPTYCHUS Peters.

hh. Anal legs crassate; spiracles sieve-likeDACETUM† Koch.

Subfamily IV.—SCOLOPENDROPSINÆ.

Analysis of genera

a. Ocelli absent.

b. Tarsi of anal legs triarticulate.

c. Dorsal plates not sulcate, first without a sulcus, last somewhat pointed.

SCOLOPOCRYPTOPS Newport.

cc. Dorsal plates bisulcate, first with a transverse sulcus, last not pointed.

OTOCRYPTOPS Haase.

bb. Tarsi of anal legs 14-jointed.....NEWPORTIA Gervais.

aa. Ocelli four; tarsi triarticulate as in Scolopocryptops...SCOLOPENDROPSIS Brandt.

Family V.—GEOPHILIDÆ.

Analysis of the subfamilies of Geophilidæ.

a. Pleuræ of prehensorial legs exposed on each side of the basal plate; cephalic plate long; basal plate small.....MECISTOCEPHALINÆ.—V.

aa. Pleuræ of prehensorial legs not exposed on each side of the basal plate.

b. The spiracle and dorsal plates touching no pleural plates between them.

GEOPHILINÆ.—VI.

bb. Between the spiracle and dorsal plate are 1-3 rows of small pleural plates.

HIMANTARIINÆ.—VII.

Subfamily V.—MECISTOCEPHALINÆ.

Includes *Mecistocephalus* Newport.

Subfamily VI.—GEOPHILINÆ.

Analysis of the genera of Geophilinæ.

a. Mandibles without a dental plate.

b. First pair of maxillæ with two palpiiform processes.....GEOPHILUS Leach.

bb. First pair of maxillæ without two palpiiform processes.

c. Exterior part of first maxillæ biarticulate.

d. Anal legs 7-jointed; mandibles with five pectinate plates.

MESOCANTHUS Meinert.

dd. Anal legs 6-jointed; mandibles with a single pectinate plate.

e. Penultimate pair of legs normal.

f. Claw of prehensorial legs without a basal tooth.

g. Claw of prehensorial legs not excavated...CHÆTECHELYNE Meinert.

gg. Claw of prehensorial legs excavated on under side.

AGATHOTHUS‡ Bollman.

* As *Branchiostoma* Newport is preoccupied (Costa, Pisces, 1834), Dr. Wood in 1861 proposed the name *Rhysida* to take its place.

† *Heterostoma* Newport is preoccupied (Hartm., Moll., 1843), and *Dacetum* Koch must be used instead.

‡ AGATHOTHUS, gen. nov. Type—*Scoliopterus gracilis* Bollman. Ann. N. Y. Ac. Sci., 110, 1888. Deriv.: ἀγαθός, good; ἵδιος, character.

- Subfamily VII.—HIMANTARIINÆ.**

a. Pleural plates between spiracle and dorsal plates in one row.

b. Spiracle plate much larger than the prescutellum; mandibular stipes with 7 or 8 pectinate plates.....ORYA Meinert.

bb. Spiracle plate almost as large as the prescutellum; mandibular stipes with 4 or 5 pectinate platesORPHNEUS Meinert.

aa. Pleural plates between spiracle and dorsal plates in two or three series.

c. None of the posterior segments tuberculate.

d. Spiracle plate larger than the prescutellum; pleuræ of anal segment small, not porous.....NOTIPHILIDES Latzel.

dd. Spiracle plate smaller than the prescutellum; pleuræ of anal segment very large, porous.....HIMANTARIUM Koch.

cc. Some of the posterior segments tuberculate.....GONIBREGMATUS Newport.

INDIANA UNIVERSITY, *May 18, 1889.*

* *Linotænia* Koch (= *Scolioplanes* Bergsöe and Meinert).

† This genus may not belong here. Karsch's description is very indefinite and is compared with *Linotenia* and *Himantarium*.

† *Meinertia*—Nom. gen. nov. for *Scotophilus* Meinert, which is preoccupied. Named after Dr. Fred. Meinert, of Copenhagen.

§ *Pectiniunguis* Bollman. [Bull. 46. U. S. Nat. Mus., p. 113.] This genus is divisible into two subgenera:

- a.** Anal pair of legs 6-jointed..... *Pectiniunguis*.
aa. Anal pair of legs 5-jointed..... *Nannopus* Bollman

BY CHARLES H. BOLLMAN.

In this paper I have given the synonymy of the various species and analytical keys whereby they may be determined.

As numerous attempts have been made to divide this family into smaller groups, I have given keys for all the subfamilies and genera known to date.

Family SCOLOPENDRIDÆ.

1844.—*Scolopendridæ* Newport. Trans. Linn. Soc., 275 and 374.

The Scolopendridæ are Chilopoda belonging to the order Epimorpha and are characterized by having 21–23 pairs of legs, 17–33-jointed antennæ, 9, 10, or 19 pairs of spiracles, and the pleuræ of anal pair of legs scutelliform.

They may be divided into the following subfamilies:

a. Pairs of legs 21.

b. Tarsi, except that of anal pair, biarticulate; pairs of spiracles 19; ocelli absent.

PLUTONIINÆ.—I.

bb. Tarsi, except that of penultimate and anal pairs, biarticulate; pairs of spiracles 10; ocelli absent or single.....CRYPTOPINÆ.—II.

bbb. Tarsi of all the legs triarticulate; pairs of spiracles 9 or 10; ocelli 4.

SCOLOPENDRINÆ.—III.

aa. Pairs of legs 23; tarsi, except that of anal and penultimate pairs, biarticulate; pairs of spiracles 10; ocelli absent or 4.....SCOLOPENDROPSINÆ.—IV.

Subfamily I.—PLUTONIINÆ.

1881.—*Scolopendridæ plusiostigmi* Cavanaugh. Bull. Ent. Ital., 176.

This subfamily only includes the European genus *Plutonium*.

Subfamily II.—CRYPTOPINÆ.

1844.—*Scolopendrina* Newport. Trans. Linn. Soc., 378 (*in part*).

1847.—*Scolopendrides morsicantes* Gervais. Aptères, IV, 243 and 250 (*in part*).

1881.—*Cryptopsii* Kohlrausch. Archiv f. Naturg.

Analysis of genera of Cryptopinæ.

a. Last dorsal plate normal; anal pair of legs not crassate.

b. Ocelli absent.....CRYPTOPS.—I.

bb. Ocelli present, single.....EREMOPS.*

aa. Last dorsal plate twice as large as the preceding; anal pair of legs short and thick; ocelli absent.....THEATOPS.—II.

* *Eremops* nom. gen. nov. for *Monops* Gervais, which is preoccupied. Deriv.: *ερημος*, lonely; *ὤψ*, an eye.

Genus I.—*Cryptops*.

1844.—*Cryptops* Leach. Trans. Linn. Soc., 384 (*hortensis*).

Type.—*Cryptops hortensis* Leach.

Etymology—κρυπτός, concealed; ὤψ, eye.

This genus contains the following North American species:

1. *Cryptops hyalinus*.

1821.—*Cryptops hyalina* Say. Journ. Acad. Nat. Sci. Phila., III (*Florida*); Say, Œuvres Ent., sp. 3, 1822; Newport, Trans. Linn. Soc., 409, 1844; Newport, Cat. Myr. Brit. Mus., 60, 1856; Wood, Jour. Acad. Nat. Sci. Phila., 34, 1862; Wood, Trans. Amer. Phil. Soc., 168, 1865; Underwood, Ent. Amer., 65, 1887.

1847.—*Cryptops hyalinus* Koch. Syst. Myr., 175; Gervais, Aptères, IV, 293, 1847; Kohlrausch, Archiv f. Naturg., 129, 1881; Bollman, Ann. N. Y. Lyc. Nat. Hist., 107, 111, 112, 1888 (*Knorville, Beaver Creek, and Mossy Creek, Tenn.*); Bollman, Ent. Amer. 6, 1888 (*Little Rock, Arkadelphia, Okolona. and Ultima Thule, Ark.*).

1847.—*Cryptops milberti* Gervais. Aptères, IV, 592 (*New Jersey*).

1862.—*Cryptops milberti* Wood. Journ. Acad. Nat. Sci. Phila., 34; Wood, Trans. Amer. Phil. Soc., 168, 1865; Underwood, Ent. Amer., 65, 1887.

1867.—*Cryptops asperipes* Wood. Proc. Acad. Nat. Sci. Phila., 129 (*Montgomery Co., Va.*); McNeill, Proc. U. S. Nat. Mus., 326, 1887 (*Pensacola, Fla.*); Underwood, Ent. Amer., 65, 1887.

1886.—*Cryptops sulcatus* Meinert. Proc. Amer. Phil. Soc., 211 (*Bee Spring, Ky.*); Underwood, Ent. Amer., 65, 1887.

Habitat.—Eastern United States N. to New Jersey, Pennsylvania, and Indiana, and W. to Indian Territory.

Etymology—Lat., of glass.

For a description of this species see that of *sulcatus* Meinert.

Underwood in his synopsis of the species of this genus has regarded *milberti*, *asperipes*, and *sulcatus* as valid species, but it seems to me that they are all identical with *hyalinus*. I have examined a large amount of material from nine different States and have been able to find only one species.

Genus II.—*THEATOPS*.

1844.—*Theatops* Newport. Trans. Linn. Soc., 410 (*postica*).

1862.—*Opisthemea* Wood. Journ. Acad. Nat. Sci. Phila., 35 (*spinicauda*).

Type.—*Cryptops postica* Say.

Etymology: θεατής, a spectator; ὤψ, an eye.

A recent examination of the type of *Cryptops postica* Say, which is deposited in the British museum, by Mr. R. Innes Pocock,* has proven that Newport was mistaken as to Say's species having eyes. The elimination of this character makes *Theatops* identical with *Opisthemea*; but as the former is oldest it must be used in place of the latter, notwithstanding the fact that it is based in part upon an erroneous character. This conclusion was published by me some time before Mr. Pocock's paper appeared (*T. crassipes* Bollman, Am. N. Y. Lyc. N. H., 110, 1888; *T. spinicaudus* Boll., Ent. Amer., 6, 1888).

*Pocock, Ann. & Mag. Nat. Hist., 283-290, 1888.

Analysis of the species of Theatops.

- a. Femora of anal legs unarmed; none of the tibial or tarsal joints armed above; all tarsal joints armed beneath, except the last two.....POSTICUS.—2
 aa. Femora of anal legs with one or two spines at their superior interior angle; tibiae, except the last three, armed above; all tarsal joints except the last two armed above and beneath; first tarsal joint of first pair of legs unarmed beneathSPINICAUDA.—3

2. Theatops posticus.

- 1821.—*Cryptops postica* Say. Journ. Acad. Nat. Sci. Phila., 112 (*Georgia and Florida*); Say, Amer. Ent., 24, 1822; Gervais, Ann. Sci. Nat., 51, 1837; Newport, Ann. & Mag. Zool., 100, 1844; Koch, Syst. Myr., 175, 1847; Gervais, Aptères, IV, 294, 1847.
 1844.—*Theatops postica* Newport. Trans. Linn. Soc., 410, 1844; Newport, Cat. Myr. Brit. Mus., 71, 1856; Wood, Journ. Phila. Acad. Nat. Sci., 37, 1862; Wood, Trans. Amer. Phil. Soc., 171, 1865; Kohlrausch, Archiv Naturg., 93, 1881; Pocock, Ann. & Mag. Nat. Hist., 289, 1888.
 1862.—*Opisthemea postica* Wood. Journ. Acad. Nat. Sci. Phila., 35 (*Goldboro, N. C.*); Wood, Trans. Amer. Phil. Soc., 169, 1865; Kohlrausch Archiv Naturg., 130, 1881; Underwood, Ent. Amer., 64, 1887.
 1886.—*Opisthemea crassipes* Meinert. Proc. Amer. Phil. Soc., 209 (*Jacksonville, Fla.; Pennington's Gap, Va.; Bee Spring, Ky.*); Meinert, Myr. Mus. Haun., 111, 35, 1886 (*Bilosi, Miss.*); McNeill, Proc. U. S. Nat. Mus., 326, 1887 (*Pensacola, Fla.*); Underwood, Ent. Amer., 64, 1887.
 1888.—*Theatops crassipes* Bollman, Ann. N. Y. Acad. Nat. Sci., 110 (*Beaver Creek, Tenn.*).

Habitat.—East of the Mississippi River, N. to Virginia, Indiana, and Illinois.

Etymology: Lat., posterior.

A comparison of northern and southern specimens shows several differences as in *Scolopocryptops sexspinosus*.

3. Theatops spinicauda.

- 1862.—*Opisthemea spinicauda* Wood. Journ. Acad. Nat. Sci. Phila., 36 (*Cook Co., Ill.*); Wood, Trans. Amer. Phil. Soc., 170, 1865 (*Illinois; Allegheny Co., Pa.*); Kohlrausch, Archiv f. Naturg., 136, 1881; Meinert, Proc. Amer. Phil. Soc., 208, 1886 (*Acapulco, Mex.*); Underwood, Ent. Amer., 64, 1887.
 1888.—*Theatops spinicaudus* Bollman. Ent. Amer., 6 (*Little Rock, Arkadelphia, Oklahoma, Muddy Fork, and Ultima Thule, Ark.*).

Habitat.—Southwestern United States S. to Acapulco, Mexico; N. through Illinois to Chicago; E. through Tennessee to the mountains, and then N. to Allegheny County, Pa.

Etymology: *spina*, spine; *cauda*, tail.

Subfamily III.—SCOLOPENDRIDÆ.

- 1844.—*Scolopendrina* Newport. Trans. Linn. Soc., 378.
 1844.—*Heterostomina* Newport. l. c., 244.
 1844.—*Cormocephalina* Newport. l. c., 419.
 1847.—*Scolopendrides cribrifères* Gervais. Aptères, 243 and 244.
 1847.—*Scolopendrides morsicantes* Gervais. Aptères, 243 and 258.

1870.—*Heterostomii* Humb. & Sauss. Rev. et Mag. Zool., 202.

1880.—*Scolopendrii* Humb. & Sauss. Rev. et Mag. Zool., 203.

1881.—*Scolopendrides anchistropi* Kohlrausch. Archiv f. Naturg. (used as a tribe of *Scol. cribrifères*).

Analysis of the genera of Scolopendrinae.

a. Pairs of spiracles 9.

b. Spiracles not branchiform.

c. Claw of max. palpus simple, unarmed; anal pair of legs short and crassate.

ASANADA Meinert.

cc. Claw of max. palpus armed on the inner side with two teeth.

d. Claw of anal pair of legs not crenulate beneath.

e. Cephalic plate subcordiform, usually partly covering first dorsal plate.

SCOLOPENDRA.—III.

ee. Cephalic plate rounded or quadrate and partly concealed by first dorsal plate..... CORMOCEPHALUS Newport.

dd. Claw of anal pair of legs crenulate beneath..... RHODA Meinert.

bb. Spiracles branchiform.

f. Claw of max. palpus armed on the inner side with a long, acute tooth; anal pair of legs normal..... OTOSTIGMA Porath.

ff. Claw of max. palpus armed on the inner side with two long, acute teeth; anal pair of legs not normal.

g. Tarsi of anal legs much depressed EUCORYBAS Gerstäcker.

gg. Tarsi not flattened; leg short and thick..... CUPIPES Kohlrausch.

aa. Pairs of spiracles 10.

h. Anal pair of legs normal.

i. First spiracle suboval..... RHYSIDA.*—IV.

ii. First spiracle-shaped TREMATOPTYCHUS Peters.

hh. Anal pair of legs crassate; spiracle sieve-like.. DACETUM † Koch.

Genus III.—SCOLOPENDRA.

1758.—*Scolopendra* Linnæus. Syst. Nat., Ed. x., 637 (restricted by later authors to *morsitans*).

Type.—*Scolopendra morsitans* L.

Etymology: *σκολόπενδρα*, scolopendra.

In the following key to the species of *Scolopendra* I have adopted Porath's name *Collaria* as a subgenus including all species which have the femora of penultimate pair of legs spinous. The other groups established, I think, are not worthy of subgeneric rank.

* As *Branchiostoma* Newport is preoccupied (Costa, Pisces, 1834), *Rhysida* Wood must be used instead.

† *Heterostoma* Newport preoccupied (Hartm., Moll., 1843) and *Dacetum* Koch must take its place.

- 1844.—*Scolopendra longicornis* Newport. List Myr. Brit. Mus., 3; Porath, Sv. Vet.-Akad. Handl., 12, 1876 (*Brazil*).
 1870.—*Scolopendra californica* Humbert & Saussure. Rev. et Mag. Zool., 203 (*California*); Humb. & Sauss., Étud. Myr., 127, Tab. v, fig. 8, 1872.
 1870.—*Scolopendra carinipes* Humbert & Saussure. Rev. et Mag. Zool., 204 (*Noes Granada*); Humb. & Sauss., Étud. Myr., 125, Tab. v, fig. 6, 1872.
 1885.—*Scolopendra morsitans caerulea* Cragin. Bull. Washt. Coll. Biol. Surv., iv, 144 (*Medicine Lodge, Barber Co., Kans.*).

Habitat.—Cosmopolitan, found throughout the tropical and sub-tropical regions; in United States, California, Kansas, Georgia, and Florida.

Etymology: Lat., biting.

Scolopendra morsitans caerulea of Cragin may not be a synonym of this species. His description is so indefinite that it is almost impossible to tell to what species it may belong.

7. *Scolopendra woodi*.

- 1861.—*Scolopendra inaequidens* Wood. Journ. Acad. Nat. Sci. Phila., 24 (*Illinois*); Wood, Trans. Amer. Phil. Soc., 162, 1865 (*not inaequidens Gervais, which is the same as alternans*).
 1886.—*Scolopendra woodi* Meinert. Proc. Amer. Phil. Soc., 198 (*Hilton's Head, S. C.; Beaufort, N. C.; Pennington's Gap, Va.*); Meinert, Myr. Mus. Haun., iii, 26, 1886 (*Biloxi, Miss.*); McNeill, Proc. U. S. Nat. Mus., 326, 1887 (*Pensacola, Fla.*); Underwood, Ent. Amer., 63, 1887 (*Lookout Mountain, Tenn.; Tortugas, Fla.; Georgia*); Bollman, Ent. Amer., 7, 1888 (*Fort Donaldson, Ark.*).

Habitat.—Southeastern United States N. to Illinois (*Anna; Villa Ridge, &c.*) and Indiana (*Bloomington*) and W. to Arkansas (*Fort Donaldson*).

Etymology: Named after Dr. H. C. Wood, of Philadelphia.

This species was first identified by Wood with *inaequidens* Gervais (= *alternans* Leach).

8. *Scolopendra pachypus*.

- 1878.—*Scolopendra pachypus* Kohlrausch. Beit. Kennt. Scol., 25 (*California*); Kohlrausch, Archiv Naturg., 113, 1881.

Habitat.—California (*Kohlrausch*), San Diego, Cal. (*Bollman*).

Etymology: *παχὺς*, thick; *πούς*, foot.

9. *Scolopendra viridis*.

- 1821.—*Scolopendra viridis* Say. Journ. Acad. Nat. Sci. Phila. (*Florida*); Say, Œuvres Ent., 23, 1822; Gervais, Aptères, iv, 276, 1847; Gervais, Cast. Exp. l'Amér. Sud, Pt. vii, 34 (*Brazil*); Wood, Journ. Acad. Nat. Sci. Phila., 22, 1862 (*Garden Key, Pensacola and Palatka, Fla.*); Wood, Trans. Amer. Phil. Soc., 159, 1865; Kohlrausch, Archiv Naturg., 112, 1881; Meinert, Proc. Amer. Phil. Soc., 196, 1886 (*Georgia*); Meinert, Myr. Mus. Haun., iii, 26, 1886 (*New Orleans*); McNeill, Proc. U. S. Nat. Mus., 112, 1887 (*Pensacola, Fla.*); Underwood, Ent. Amer., 63, 1887.
 1844.—*Scolopendra punctiventris* Newport. List Myr. Brit. Mus., 5 (*Florida*); Newport, Trans. Linn. Soc., 387, 1844; Gervais, Aptères, iv, 277, 1847; Newport, Cat. Myr. Brit. Mus., 33, 1856; Gervais, Cast. Exp. l'Amér. Sud, Pt. vii, 34, 1859.
 1861.—*Scolopendra parva* Wood. Proc. Acad. Nat. Sci. Phila., 10 (*Georgia*).

Habitat.—Southeastern United States N. to Tennessee (*Mossy Creek and Lookout Mountain*).

Etymology: Lat., green.

The locality, *Brazil*, assigned by Gervais (Cast. Exp. l'Amér. Sud, Pt. VII, 34) to this species is erroneous, as *viridis* is not found S. of the United States.

10. *Scolopendra heros*.

1853.—*Scolopendra heros* Girard. Marcy's Red. R. Exp., App. F, 243 (*Texas*); Wood, Journ. Acad. Nat. Sci. Phila., 18, 1862 (*Louisiana, Texas, Arkansas, New Mexico, Arizona, Mexico*); Wood, Trans. Amer. Phil. Soc., 155, 1865; Porath, Sv. Vet.-Akad. Handl., 8, 1876 (*Texas*); Cragin, Bull. Washt. Coll. Biol. Surv., iv, 143 (*Turkey Creek*); Meinert, Proc. Amer. Phil. Soc., 195, 1886 (*Westfield, N. Y.; Mammoth Cave, Ky.; Key West, Fla.; Alexandria and Seabrook Island, Ga.; Mobile and Spring Hill, Ala.; Galveston, Tex.; Montevias, San Luis Potosi, and Guaymas, Mex.; San Diego, Cal.; Fort Riley, Kans.*); Underwood, Ent. Amer., 63, 1887; Bollman, Ent. Amer., 6, 1888 (*Little Rock, Murfreesboro, and Muddy Fork, Ark.*).

1861.—*Scolopendra castaniceps* Wood. Proc. Amer. Phil. Soc., 11 (*Texas*).

1862.—*Scolopendra heros castaniceps* Wood. Journ. Acad. Nat. Sci. Phila., 18, 1862; Wood, Trans. Amer. Phil. Soc., 156, 1865; Cragin, Bull. Washt. Coll. Biol. Surv., iv, 144, 1885 (*Barber County, Kans.*).

1861.—*Scolopendra polymorpha* Wood. Proc. Acad. Nat. Sci. Phila., 11 (*Fort Riley, Kans.*); Wood, Journ. Acad. Nat. Sci. Phila., 20, 1862 (*Kansas, Texas, Arizona, Mexico*); Wood, Trans. Amer. Phil. Soc., 158, 1865; Kohlrausch, Archiv Naturg., 114, 1881; Cragin, Bull. Washt. Coll. Biol. Surv., iv, 144, 1885 (*Rice, Finley, and Barber Co., Kans.*).

1862.—*Scolopendra copeana* Wood. Journ. Acad. Nat. Sci. Phila., 27 (*California*); Wood, Trans. Amer. Phil. Soc., 165, 1865.

1885.—*Scolopendra heros pusinatica* Cragin, Bull. Washt. Coll. Biol. Surv., iv, 144 (*Medicine Lodge, Barber Co., Kans.*).

Habitat.—Central America, Mexico; in United States N. to California, Utah, Kansas, Kentucky, and Georgia.

Etymology.—Lat., a demigod.

A careful study of a large amount of material of this species may establish several subspecies.

11. *Scolopendra crudelis*.

1847.—*Scolopendra crudelis* Koch. Syst. Myr., 170 (*Barthelymi*); Koch, Die Myr., II, 36, Tab. LXXVII, LXXVIII, Figs. 158, 159, 1863; Porath, Sv. Vet.-Akad. Handl., 7, 1876 (*? New York*); Kohlrausch, Archiv Naturg., 20, 1881; Meinert, Proc. Amer. Phil. Soc., 194, 1886; Underwood, Ent. Amer., 63, 1887 (*Florida, Tortugas, Key West, Hayti*).

1861.—*Scolopendra longipes* Wood. Journ. Acad. Nat. Sci. Phila., 26 (*Ft. Jefferson, Garden Key, Fla.; ? Halifax, N. S.*); Wood, Trans. Amer. Phil. Soc., 163, 1865.

Habitat.—West Indies and southern Florida.

Etymology.—Lat., unmerciful.

Porath mentions a specimen of *crudelis* from *New York*, but this is erroneous or else it is one that has been introduced by shipping.

Genus IV.—RHYSIDA.

1844.—*Branchiostoma* Newport. Trans. Linn. Soc., 411 (*lithobioides*).1862.—*Rhysida* Wood. Journ. Acad. Nat. Sci. Phila., 40.Type.—*Branchiostoma lithobioides* Newport.*Etymology*: ρυσός, corrugated.

As *Branchiostoma* Newport is preoccupied (*Branchiostoma* Costa, 1834, *Pisces*), Dr. Wood in 1862 proposed the genus *Rhysida*.

This name has always been disregarded, but, as Newport's name is preoccupied, we must use *Rhysida* in its place.

This genus contains the following species:

12. *Rhysida celer*.

1870.—*Branchiostoma celer* Humbert and Saussure, Rev. et Mag. Zool., 202 (*Carolina*); Saussure and Humbert, Étud. Myr., 122, Tab. vi, f. 16, 187; Kohlrausch, Archiv Naturg., 69, 1878; Meinert, Proc. Amer. Phil. Soc., 183, 1886 (*Kington, Jamaica; Polzon, Nicaragua*); Meinert, Myr. Mus. Haun., III, 18, 1886 (*Riacho del Oro, Buenos Ayres*); Underwood, Ent. Amer., 63, 1887.

Habitat.—Central America, West Indies; Carolina (*Saussure*).

Etymology.—Lat., quick.

The locality (*Carolina*) assigned to this species by Humbert and Saussure is probably erroneous and no doubt their specimen was from Mexico or some West Indian island, where, on the same trip, most of their collecting was done. For a description of this species see "Meinert, Proc. Amer. Phil. Soc., 183, 1886."

Subfamily IV.—SCOLOPENDROPSINÆ.

1844.—*Scolopendrina* Newport. Trans. Linn. Soc., 378 (*in part*).1847.—*Scolopendrides heteropodes* Gervais. Aptères, IV, 243.1870.—*Scolopendropsii* Humbert and Saussure, Rev. and Mag. Zool., 204.*Analysis of the genera of Scolopendropsinæ.*

a. Ocelli present; tarsi triarticulate SCOLOPENDROPSIS Brandt.

aa. Ocelli absent.

b. Tarsi of anal legs triarticulate.

c. Dorsal plates not sulcate, first without a transverse sulcus as in many species of *Scolopendra*, last somewhat pointed SCOLOPOCRYPTOPS.—V.

cc. Dorsal plates bisulcate, first transversely, last not pointed.

OTOCRYPTOPS Haase.

bb. Tarsi of anal pair of legs 14-jointed NEWPORTIA Gervais.

Genus V.—SCOLOPOCRYPTOPS.

1844.—*Scolopocryptops* Newport. Trans. Linn. Soc., 405 (*miersi*).

Type.—*Scolopocryptops miersi* Newport.

Etymology.—σκολόπενδρα, scolopendra; κρυπτός, concealed; ὤψ, eye.

Analysis of the species of Scolopocryptops.

- a. Femora of anal legs armed with two large spines (inner sometimes atrophied in northern specimens of *sexspinosus*).
- b. Coxæ of prehensorial legs sinuate, but never truly dentate.
 - c. Tarsi of anal pair of legs not densely pubescent.
 - d. Cephalic plate not marginate MIERSI.—13.
 - dd. Cephalic plate marginate.
 - e. First antennal joint not hirsute (eastern) SEXSPINOSUS.—14.
 - ee. First two antennal joints not hirsute (western) SPINICAUDUS.—14b.
 - cc. Tarsi of anal legs densely pubescent; olive brown; head, first and last segments reddish brown NIGRIDIVS.—15.
- bb. Coxæ of prehensorial pair of legs dentate; tarsi of anal legs densely pubescent.
 - GRACILIS.—16.

13. *Scolopocryptops miersii*.

- 1844.—*Scolopocryptops miersii* Newport. Linn. Trans., 405 (*Brazil*); Gray, List Myr. Brit. Mus., 7, 1844; Gervais, Aptères, iv, 298, 1847; Newport, Cat. Myr. Brit. Mus., 56, 1856; Gervais, Cast. Exp. l'Amér. du Sud, Pt. vii, Myr. and Scorp., 36, 1859; Karsch - - -
- Not syn.—Meinert. Proc. Amer. Phil. Soc., 181, 1886; Meinert, Myr. Mus. Haun., iii, 41, 1886, =? *Scolop. meinerti* Pocock.

Habitat.—South America, West Indies, Mexico, and California (*Karsch*).

Etymology.—Named after Mr. John Miers, an English gentleman.

I have never seen any specimens of this species and the short characteristic I have given in the key is taken from Karsch's key to the species of this genus.

14. *Scolopocryptops sexspinosus*.

- 1821.—*Cryptops sexspinosus* Say. Journ. Acad. Nat. Sci. Phila., 112 (*Georgia and Florida*); Say, Œuvres Ent., 24, 1822; Gervais, Ann. Sc. Nat., 51, 1837; Newport, Ann. and Mag. Zool., 100, 1844; Koch, Syst. Myr., 175, 1847.
- 1844.—*Scolopocryptops 6-spinosa* Newport. Linn. Trans., 407; Newport, Cat. Myr. Brit. Mus., 57, 1856.
- 1847.—*Scolopocryptops sexspinosus* Gervais. Aptères, iv, 298; Gervais, Cast. Exp. l'Amér. du Sud, Pt. vii, Myr. and Scorp., 36, 1859; Wood, Jour. Acad. Nat. Sci. Phila., 37, 1862 (*Salem, N. C.; Cook Co., Ill.; Mississippi; Carlisle, Pa.; Charleston, S. C.; St. Louis, Mo.; Texas*); Wood, Trans. Amer. Phil. Soc., 172, 1865; Porath, Sv. Vet.-Akad. Handl. Bih. 26, 1876 (*San Paola, Brazil*); Kohlrausch, Archiv f. Natur., 54, 1878; Meinert, Proc. Amer. Phil. Soc., 179, 1886 (*Id.; Mass.; N. Y.; Pa.; Va.; Ga.; Ala.; Ky.; Iowa; W. Va.; Cal.*); Meinert, Myr. Mus. Haun., iii, 14, 1886 (*New York*); McNeill, Proc. U. S. Nat. Mus., 326, 1887 (*Pensacola, Fla.*); Underwood, Ent. Amer., 63, 1887; Bollman, Ann. N. Y. Lyc. Nat. Hist., 110, 1888 (*Beaver Cr., Tenn.*); Bollman, Ent. Amer., 7, 1888 (*Arkansas*).
- 1847.—*Scolopendropsis helvola* Koch. Syst. Myr., 175 (*North America*); Koch, Die Myr., ii, 34, Tab. LXXVI, f. 156, 1863.
- 1886.—*Scolopocryptops georgicus* Meinert. Proc. Amer. Phil. Soc., 180 (*Georgia*); Underwood, Ent. Amer., 63, 1887.

Habitat.—Massachusetts to Florida and Texas, west of the mountains replaced by variety *spinicaudus*.

Etymology.—*Sex*, six; *spinosus*, spiny.

Comparisons of northern and southern specimens show, as we proceed southwards, the following differences:

(1). An increase in size, especially in the anal legs, which are more slender.

(2). An increase in size in the femoral spines of anal legs.

(3) A tendency among some of the more southern specimens for the coxæ of the prehensorial legs to become dentate.

(4) A tendency for the lateral margins of anal segment to become more callous and slightly serrulate.

(5) An increase in the density of the general coloration and an increase in the paleness of the anal legs beneath.

The following table shows the increase in size of the anal pair of legs:

Habitat.	Total length.	Length of anal.
	mm.	mm.
Winona, Minn.....	45	7.8
Chicago, Ill.....	37	8.4
Bloomington, Ind.....	50	9.4
Baltimore, Md.....	32	7.7
Chapel Hill, N. C.....	48	11.5
Mossy Creek, Tenn.....	55	17.
Little Rock, Ark.....	42	10.7
Eagleton, Indian Ter.....	58	14.6
Indian Springs, Ga.....	65	18.
Do.....	35	7.7
Pensacola, Fla.....	35	10.

The increase in length of legs is more noticeable in specimens from the southeast portion of the United States, while toward the southwest they tend to be more like the northern.

As all my specimens from Pensacola are small I have compared them with one of the same size from Georgia.

Some specimens from Winona and Chicago have the interior spine of anal legs absent.

The specimen from Baltimore has the tibia and tarsi of anal legs pilose, the hairs being much longer than those of other specimens; the other legs are rather sparsely pilose.

Those from Indian Springs seem to represent *Scolop. georgicus* of Meinert; although the anal legs are longer, the first 4 dorsal plates immarginate, and the prosternum slightly dentate, I believe it should not be considered as a good species.

14b. *Scolopocryptops sexspinosus spinicauda*.

1862—*Scolopocryptops spinicauda* Wood. Journ. Acad. Nat. Sci. Phila., 39 (*Shoal Water Bay, W. T.; Oregon*); Wood, Trans. Amer. Phil. Soc., 174, 1865; Wood, Proc. Acad. Nat. Sci. Phila., 128, 1867 (*San Jose, Cal.*).

Habitat.—Shoal Water Bay and Chehalis, W. T.; Oregon; San José and San Mateo, California.

Etymology.—Latin, *spina*, spine; *cauda*, tail.

A careful examination of two specimens of *sexspinosus* from Chehalis, W. T., proves, as Dr. Wood has previously shown, that the western and eastern specimens should be separated. The main difference lies in the hirsuteness of the first antennal joints; the differences mentioned by Wood are hardly sufficiently distinct to separate the two forms. •

15. *Scolopocryptops nigridius*.

1887—*Scolopocryptops nigridius* McNeill. Proc. U. S. Nat. Mus., 333 (*Bloomington, Ind.*); Bollman, Ann. N. Y. Acad. Nat. Sci., 107, 1888 (*Knorrville, Tenn.*); Bollman, *ibid.*, 110 (*Beaver Cr., Tenn.*); Bollman, *ibid.*, 112 (*Mossy Cr., Tenn.*).

Habitat.—Monongahela City, Pa.; Bloomington, Greencastle, Salem, Indiana; Chapel Hill, N. C.; Beaver Creek, Mossy Creek, Knoxville, Tenn.

Etymology.—Latin, blackish.

For the sake of completeness I give the following description of *nigridius*.

Head, antennæ, first and last dorsal segments reddish brown; other parts greenish brown; legs paler, with the femoral and tibial joints of the posterior pairs turquoise-green beneath. Moderately robust; sparsely pilose; rather densely punctate, especially on head. Antennæ rather short, articles rather long, all except the first two densely hirsute. Coxæ of prehensorial legs strongly callous, sinuate; coxal tooth short and blunt. Anal legs short, tarsi densely pilose as in *gracilis*; inferior spine large, interior small. Tarsi of anal and penultimate pairs of legs unarmed, second tarsal joint, except that of the last four pairs of legs, armed above. All the dorsal plates except the first three marginal; two indistinct short sulci on the posterior part of the segment. Anal pleuræ scabrous, densely porous; spine large, robust. Anal sterna wide, sides slightly rounded, posterior margin emarginate. Length 25–40^{mm}; length of anal legs 6–9^{mm}.

This is the species mentioned by Cope (Proc. Amer. Phil. Soc., 179, 1869) as an undescribed *Scolopocryptops* with a "greenish body and a reddish head."

16. *Scolopocryptops gracilis*.

1862.—*Scolopocryptops gracilis* Wood. Journ. Acad. Nat. Sci. Phila., 38 (*Ft. Tejon, Cal.*); Wood, Trans. Amer. Phil. Soc., 173, 1865.

1862.—*Scolopocryptops lanatipes* Wood. Journ. Acad. Nat. Sci. Phila., 39 (*California*); Wood, Trans. Amer. Phil. Soc., 175, 1865; Kohlrausch, Archiv Naturg., 56, 1881; Underwood, Ent. Amer., 62, 1887.

1870.—*Scolopocryptops californica* Humbert & Saussure. Rev. & Mag. Zool., 204 (*California*); Humb. & Sauss., Miss. Sci. Mex., 1872.

Habitat.—Upper and Lower California.

Etymology.—Latin, slender.

Recent writers have used the name *lanatipes* for this species; but, as *gracilis* preceded *lanatipes* in Wood's monograph, it should be employed.

RECAPITULATION.

The following is a list of the genera and species of *Scolopendridæ* now recognized by me as occurring in North America north of Mexico.

Subfamily I.—CRYPTOPINÆ.

1. *Cryptops hyalinus* Say.
2. *Theatops posticus* (Say).
3. *Theatops spinicaudus* (Wood).

Subfamily II.—SCOLOPENDRINÆ.

3. *Scolopendra* Linnaeus.(*Scolopendra*.)

4. *Scolopendra dehaani* Brandt.
5. *Scolopendra subspinipes* Leach.
6. *Scolopendra morsitans* L.
7. *Scolopendra woodi* Meinert.
8. *Scolopendra packypus* Kohlrausch.
9. *Scolopendra viridis* Say.
10. *Scolopendra heros* Girard.

(*Collaria*.)

11. *Scolopendra crudelis* Koch.

4. *Rhysida* Wood.

12. *Rhysida celer* (Humbt. & Sauss.).

Subfamily III.—SCOLOPENDROPSINÆ.

5. *Scolopocryptops* Newport.

13. *Scolopocryptops miersi* Newport.
14. *Scolopocryptops scarpinosus* (Say).
- 14b. *Scolopocryptops scarpinosus spinicaudus* (Wood).
15. *Scolopocryptops nigrinus* McNeill.
16. *Scolopocryptops gracilis* Wood.

INDIANA UNIVERSITY, Bloomington, Ind., June 15, 1889.

A LIST OF THE MYRIAPODA OF MINNESOTA.*

BY CHARLES H. BOLLMAN.

The following list of myriapods of the State of Minnesota is based upon the material in my collection, which has been collected at two points, Fort Snelling and Winona.

Before I began my study of the myriapods of Minnesota, only one species (*Linotania chionophila*) was reported from this State. In this paper I have recorded twenty-five species as occurring within the limits of the State. I wish to express my indebtedness to Messrs. W. D. and G. M. Howe for the material from Fort Snelling, and to Mr. J. M. Holzinger, of the State Normal, for the material from Winona.

A.—FORT SNELLING.

The material from this place was collected during the summers of 1886 and 1887. On account of the dry seasons the collections were small; in fact, only nine species were obtained, against twenty-four from Winona.

1. *Parajulus diversifrons* (Wood).

Julus sp.? Wood. Proc. Acad. Nat. Sci. Phila., 10, 1864 (Illinois); Wood, Trans. Amer. Philos. Soc., 197, 1865.

Julus diversifrons Wood. Proc. Acad. Nat. Sci. Phila., 43, 1867 (Texas).

Julus diversifrons Borre. Ann. Soc. Ent. Belg., 54, 1884.

Parajulus castaneus Bollman. Ent. Amer., 21, 1887 (Ft. Snelling, Minn.); Bollman. Ann. N. Y. Acad. Sci., 35, 1887.

Besides the two type specimens of *castaneus* only a few were afterwards found.

2. *Parajulus ellipticus* Bollman.

Julus ellipticus Bollman. Amer. Nat., 82, 1887 (Ft. Snelling, Minn.).

Parajulus ellipticus Bollman. Ann. N. Y. Acad. Sci., 35, 1887.

The types of *ellipticus* were the only specimens obtained.

3. *Campodes flavicornis* Koch.

I have seen several specimens which agree well with those from more southern and eastern localities, but the majority of specimens are small (8–10^{mm}) and strongly resemble *Chordeuma*.

*This and the two following papers were brought to my attention some four years after the preceding material had been passed upon by Dr. Underwood. It happened that Mr. O. F. Cook was in Washington when the papers were found, and he considered them equally worthy of publication with the others.—C. V. Riley, *Honorary Curator*.

4. *Scytonotus granulatus* (Say).

Not uncommon.

5. *Polydesmus serratus* Say.

Polydesmus serratus Say. Jour. Phila. Acad. Nat. Sci., 106, 1820 (*Virginia*); Gervais, Aptères, iv, 105, 1847; Gervais, Cast. Exp. l'Amér. Sud. vii, Myr. and Scorp., 6, 1856; Saussure, Mex. Myr., 67, 1860 (*South Carolina*); Peters, Monastb. kön. preuss. Akad. Wiss., 539, 1864 (*Pennsylvania*).

Polydesmus canadensis Newport. Ann. and Mag. Nat. Hist., 265, 1844 (*Hudson's Bay*); Gray, Cat. Myr. Brit. Mus., 16, 1844; Gervais, Aptères, iv, 106, 1847; Gervais, Cast. Exp. l'Amér. Sud. 6, 1859; Wood, Trans. Amer. Philos. Soc., 216, 1865 (*Pennsylvania*, etc.).

Polydesmus glaucescens Koch. Syst. Myr., 133, 1847 (*N. A.*); Koch, Die Myr., I, 59, f. 51, 1863.

Polydesmus pennsylvanicus Koch. Syst. Myr., 133, 1847 (*Pennsylvania*); Koch, Die Myr., II, 18, t. 69, f. 142, 1863.

Not syn.—*Poly. serratus* Wood. Trans. Amer. Philos. Soc., 215, 1865 (*P. moniliaris* Koch).—*Poly. canadensis* McNeill, Proc. U. S. Nat. Mus., 324, 1887 (*Pensacola, Fla.*; *P. nitidus* Bollman). *Poly. canadensis* Bollman, Ann. N. Y. Acad. Nat. Sci., 107, 1888 (*Knoxville, Tenn.*; *P. branneri* Bollman).

In this paper I have regarded *Poly. canadensis* as representing the true *serratus* of Say. The *Poly. serratus* of Wood, which has the lateral carinæ finely serrate, is probably *Poly. moniliaris* Koch.

6. *Fontaria virginiensis brunnea* Bollman.

Fontaria virginensis brunnea Bollman. Amer. Nat., 82, 1887 (Ft. Snelling, Minn.).

Besides the type, I afterwards received another specimen that was not in color.

7. *Geophilus bipuncticeps* Wood.

One female was found in the collections.

8. *Lithobius minnesotæ* Bollman.

Lithobius minnesotæ Bollman. Amer. Nat., 81, 1887 (Ft. Snelling, Minn.); Bollman, Proc. U. S. Nat. Mus., 255, 1887.

Only the type of this species was obtained.

9. *Lithobius howei* Bollman.

Lithobius howei Bollman. Amer. Nat., 81, 1887 (Ft. Snelling, Minn.); Bollman, Proc. U. S. Nat. Mus., 254, 1887.

Only the type specimen was found. This species is closely related to *politus* McNeill, but until good material can be obtained it will be best to let it stand as it is.

B.—WINONA.

The collections received from this locality were made during 1886 and 1887. As the material was collected at all suitable times in the year, I have been enabled to present a rather exhaustive list of the myriapods of this vicinity.

The greater bulk of the material consisted of specimens of *Lithobius forficatus*.

1. *Parajulus venustus* Wood.

Julus venustus Wood. Proc. Phila. Acad. Nat. Sci., 10, 1864 (*Illinois*).

Julus venustus Preudhomme de Borre. Ann. Soc. Ent. Belg., 62, 1884.

Julus impressus Wood, etc.

In this paper I have regarded the *Julus venustus* of Wood as representing a valid species and not identical with *impressus*, as Wood himself and other writers have later held.

In the Trans. Amer. Phil. Soc., 196, 1865, Wood makes *venustus* and *impressus* the same, and mentions a specimen from Georgia. I regard the specimens from Georgia as the true *impressus*, which is found in Indiana, Georgia, and Florida, while *venustus* is found in Colorado, Kansas, Minnesota, Michigan, Illinois, and Indiana.

2. *Parajulus diversifrons* (Wood).

Common.

3. *Parajulus ellipticus* Bollman.

This is a very common species, if not even abundant.

4. *Lysiopetalum lactarium* (Say).

Several specimens were sent in the last collection.

5. *Campodes flavicornis* Koch.

Not uncommon. Most of specimens sent were very young.

6. *Craspedosoma atrolineatum* Bollman.

A single female from here seems to agree in all the principal characters with the types of *C. atrolineatum*, which are from British Columbia.

7. *Leptodesmus borealis*, sp. nov.

Anterior parts of segments reticulated with black, posterior border, lateral carinæ, legs and antennæ yellow, an indistinct, broad, black median, dorsal line. Body robust, narrow, strongly subterete. Vertex smooth, sulcus extending to base of antennæ, setigerous foveolæ. Antennæ short and filiform. First segment semicircular, sides slightly margined, posterior border somewhat emarginate. Other segments more or less corrugate, especially above lateral carinæ. Lateral carinæ small, thick, anterior border not prominent, rounded, posterior scarcely angulated, but produced posteriorly into thick, short, rounded lobes. Mucro of last segment large and thick. Repugnatorial pores moderately large, lateral and subapical. Legs moderately long, extending beyond sides of body. Length of body ♀, 23.5^{mm}; width and height, 3^{mm}; length of antennæ, 2.4^{mm}.

Leptodesmus borealis differs from all the species found in Eastern United States by its thick lateral carinæ and the strongly terete body. It approaches more to *L. eruca* (Wood) from Oregon.

The above description is based on a female, which was collected near Winona by Prof. Holzinger in the fall of 1887.

As this is the most northern species of the genus that has been found, I have given it the specific name of *borealis*.

8. *Euryurus evides* Bollman.

Paradesmus evides Bollman. Ent. Amer., 229, 1887 (Winona, Minn.).

Very common.

9. *Scytonotus granulatus* (Say).

Not common.

10. *Polydesmus serratus* Say.

Very common.

11. *Fontaria virginiensis brunnea* Bollman.

Common.

12. *Linotænia fulva* (Sagér).

Common.

13. *Geophilus urbicus* Meinert.

Geophilus gracilis Harger. Amer. Journ. Sci. and Arts, 118, 1872 (New Haven, Conn.; preoccupied).

Geophilus urbicus Meinert. Proc. Amer. Philos. Soc., 218, 1856 (Cambridge, Mass.).

Prof. Holzinger has sent me a male in a tolerably good condition which I refer to this species. As *G. gracilis* Harger is preoccupied, *urbicus* Meinert must take its place.

14. *Geophilus setiger* Bollman.

Geophilus setiger Bollman. Ent. Amer., 82, 1887 (Salem, Ind.).

There is a male in the collection that agrees perfectly well with the types of this species.

15. *Geophilus foveatus* (McNeill).

Mecistocephalus foveatus McNeill. Proc. U. S. Nat. Mus., 325, 1887 (*Pensacola, Fla.; name only*); McNeill, Proc. U. S. Nat. Mus., 333, 1887 (Bloomington, Ind.).

There is one specimen that agrees with those from more southern localities.

16. *Geophilus bipuncticeps* Wood.

Common.

17. *Scolopocryptops sexspinosus* (Say).

Common. These specimens differ from all known to me from other localities in most times having the spine on the inner sides of anal legs obliterated; otherwise they are identical.

18. *Henicops fulvicornis* (Meinert).

I have seen about a dozen specimens, more or less mutilated as to antennæ and legs, so that very much can not be ascertained with certainty, but they seem to agree with the published descriptions. This makes the third locality from which specimens have been reported in North America.

19. *Lithobius tuber* Bollman.

Not common.

20. *Lithobius holzingeri* Bollman.

Lithobius holzingeri Bollman. Ent. Amer., 83, 1887 (Winona, Minn.).

Common.

21. *Lithobius bilabiatus* Wood.

Not common.

22. *Lithobius forficatus* (Linné).

This is the most abundant myriapod around Winona, as is indicated by the numerous specimens received.

23. *Lithobius howei* Bollman.

Rare.

24. *Lithobius mordax* Koch.

Rare.

Specimens from the northern localities differ from those from other places by having the anal legs more flattened and shorter.

INDIANA UNIVERSITY, *June 1, 1888.*

NOTES ON THE POLYZONIIDÆ.

BY CHARLES H. BOLLMAN.

- 1841.—*Ommatophora* Brandt. Recueil, 89 (*Polyzonium*).
 1841.—*Typhlogena* Brandt. Recueil, 50 (*Siphonophora*).
 1844.—*Polyzonidæ* Gervais. Ann. Sci. Nat., 3, ser. zool., II, 70 (*Polyzonium*).
 1844.—*Polyzoniden* Koch. Syst. Myr., 61 and 142 (*Polyzonium*).
 1847.—*Polyzonides* Gervais. Aptères, IV, 203 (*Polyzonium*).
 1865.—*Polyzoniidæ* Wood. Trans. Amer. Phil. Soc., 248 (*Polyzonium*).
 1869.—*Andrognathidæ* Cope. Proc. Amer. Phil. Soc., 182 (*Andrognathus*).

The characters of the family are the same as those of the order *Colobognatha*.

Analysis of the subfamilies of Polyzoniidæ.

- * *Gnathochilarium* represented by an acute triangular plate; dorsal plates not sulcate nor covered with short stiff hairs; lateral carinæ not well developed. POLYZONIINÆ.—A.
 ** *Gnathochilarium* subsimilar to that of the *Julidæ*; dorsal plates medianly and transversely sulcate, covered with numerous short hairs; lateral carinæ well developed PLATYDESMINÆ.—B.

A.—POLYZONIINÆ.

- 1841.—*Ommatophora* Brandt. Recueil, 49.
 1844.—*Siphonophorida* Newport. Trans. Linn. Soc., 278.
 1872.—*Polyzon* Humbert & Saussure. Miss. Sci. Mex., VI, 99.
 1897.—*Polyzonii* Pocock. Ann. and Mag. Nat. Hist., 225.

I.—POLYZONIUM.

- 1834.—*Polyzonium* Brandt. Oken's Isia, 704 (*germanicus*).
 1836.—*Platyulus* Gervais. Bull. Soc. Phil. Paris, 71 (*audouinii* = *germanicum*).
 1839.—*Leiosoma* Victor. Bull. Nat. Moscou, 34, Pl. 1 (*rosea* = *germanicum*).
 1870.—*Petaserpes* Cope. Trans. Amer. Ent. Soc., 65 (*rosalbus*).
 1880.—*Hirudisoma* Fanzago. Bull. Soc. Ent. Ital., 276 (*pallidum*).
 1887.—*Hexaglena* McNeill. Proc. U. S. Nat. Mus., 328 (*rosalbus*).
 1888.—*Hexaglena* McNeill. Bull. Brook. Soc. Nat. Hist., III, 188.

Body wide, depressed, elongate-oblong; convex above, slightly concave beneath; not pilose. Head distinctly rostrate, partly concealed under the first dorsal plate. Antennæ subclavate, bases approximate, articles subequal. Ocelli present, 2-4, arranged in two diverging series between the bases of antennæ. Mandibles small, triangular. *Gnathochilarium* much degenerated; stipes apparently deeply bifid, acuminate; lingual lobes well developed; promentum small, ovate; mentum, hypostoma and cardo not developed. Dorsal plates smooth, not sulcate or tuberculate, first arcuate, advanced forward to the base

of the antennæ. Anal segment — — —. Anal valves small, smooth; anal scale absent. Lateral carinæ — — —. Repugnatorial pore beginning at the fifth segment.

Polyzonium rosalbum.

Petaserpes rosalmus Cope. Trans. Amer. Ent. Soc., 65, 1870 (Cumberland Mountains, Tenn.).

Hexaglena cryptocephala McNeill. Proc. U. S. Nat. Mus., 328, 1887 (Bloomington, Ind.).

OCTOGLENA.

1864.—*Octoglena* Wood. Proc. Phila. Acad. Nat. Sci., 186 (*bivirgata*).

If we can trust the figures of Wood showing the head and a few segments of *Octoglena bivirgata*, this genus differs from *Polyzonium* by having the first segments marginate and not concealing the ocelli.

If his figures are not trustworthy *Octoglena* is equal to *Polyzonium*.

This genus contains the following species:

Octoglena bivirgata.

Octoglena bivirgata Wood. Proc. Phila. Acad. Nat. Sci., 186, 1864 (*Georgia*); Wood, Trans. Amer. Phil. Soc., 229, 1865.

B.—PLATYDESMINÆ.

1860.—*Platydesmii* Saussure. Myr. Mex., 83.

1872.—*Platydesmia* Humbert and Saussure. Miss. sci. Mex., vi, 99.

1884.—*Dolistenia* Latzel. Myr. Öst.-Ungar. Monarch., ii, 362.

1887.—*Platydesmini* Pocock. Ann. and Mag. Nat. Hist., 225.

Analysis of the genera of Platydesminæ.

a. Body narrow, filiform; mentum rectangular; hypostoma not well developed; anal scale absent; segments not tuberculate.

b. Fifth segment normal, pores not carried on a pedicel. DOLISTENUS.

bb. Lateral carinæ of fifth segment large, deeply sinuate, anterior lobe directed forwards and bearing the repugnatorial pore, which is raised on a short pedicel; other pores on a pedicel but opening on the posterior half of segments. ANDROGNATHUS.—III.

aa. Body wide, depressed; mentum hammer-shaped; hypostoma well developed; anal scale present; segments tuberculate. PLATYDESMUS.—IV.

ANDROGNATHUS COPE.

1869.—*Andrognathus* Cope. Proc. Amer. Phil. Soc., 182 (*corticarius*).

Body narrow, filiform, convex above and below, covered with numerous short hairs. Head not rostrate (mouth parts not adapted for sucking), not concealed by first dorsal plate, densely pilose. Antennæ clavate, short. Ocelli absent. Gnathochilarium well developed, stipes acuminate, destitute of mola and teeth; hypostoma rectangular; cardo rather long and narrow, triangular; mentum rectangular; promentum elongate-ovate; lingual plates, acuminate, separate, destitute of lobes. Dorsal plates medianly sulcate, not tuberculate. First dorsal plate

moderately ovate, the first four dorsal plates smaller than the succeeding. Anal segment large, not tuberculate, inclosed between the lateral carinæ of penultimate; anal valves smooth; anal scale absent. Lateral carinæ large, angulated; the fifth deeply emarginate, bilobed. Repugnatorial pores born on a pedicel, placed on the anterior lobe of fifth lateral carinæ, but supapical on the rest. Legs extending beyond sides of body.

Andrognathus is closely allied to the European genus *Dolistenus* Fanzago, but the later genus is separated from *Andrognathus* by the form of the fifth segment and of the repugnatorial pores.

This genus contains the following species:

Andrognathus corticarius.

Andrognathus corticarius Cope. Proc. Amer. Phil. Soc., 182, 1869 (*Montgomery Co., Va.*); Bollman, Ann. N. Y. Acad. Sci., 108, 1888 (*Beaver Cr., Tenn.*).

Yellowish brown, legs and under parts paler. Segments 40–60, first four smaller than the succeeding. Lateral carinæ strongly developed, more aliform posteriorly. Repugnatorial pore large, placed on the anterior lobe of fifth segment, but posterior and almost subapical on the others. Male: Anterior legs with claws normal. Length of body 10–20^{mm}.

Habitat.—Montgomery Co., Va. (Cope); Mossy Creek, Strawberry Plains, and Beaver Creek, Jefferson County, Tennessee.

PLATYDESMUS.

1843.—*Platydesmus* Lucas. Ann. Soc. Ent. France, 51 (*polydesmoides*).

1849.—*Piestodesmus* Lucas. Rev. et Mag. Zool., 589 (*moreleti*).

1864.—*Brachycybe* Wood. Proc. Phila. Acad. Nat. Sci., 187 (*lecontei*).

Body wide depressed, elongate-oblong, covered with numerous short hairs; convex above and below. Head not suclatorial nor concealed by the first dorsal plate, densely pilose. Antennæ slightly clavate, second article longest, bases remote. Ocelli absent. Mandibles small, triangular, two-toothed and pilose on the inner side.

Gnathochilarium well developed; stipes large, mala and teeth not well developed; hypostoma as in *Pseudodesmus*; cardo present; mentum hammer-shaped; pronotum small, elongate orate; lingual plates touching, lingual lobes distinct. Dorsal plates medianly sulcate, with two transverse rows of non-pilose tubercles. Lateral carinæ large, those of the first ten directed forwards. Anal segment tuberculate, included between the lateral carinæ of penultimate; anal valves smooth; anal scale present. Repugnatorial pore beginning at fifth segment, and nearer the anterior margin than the others. Legs not extending beyond sides of body.

Platydesmus, *Piestodesmus*, and *Brachycybe* agree in all points except as to the possession of ocelli—*Piestodesmus* has two, *Platydesmus* one,

and *Brachycybe* has none, but until a satisfactory examination can be made of the eyes, it is not best to rank any even as subgenera.

The so-called vitreous ocellus of *Platydesmus* seems to me to be nothing but a slight swelling of the head behind the antennæ. This genus contains the following species:

Platydesmus lecontei.

Brachycybe lecontei Wood. Proc. Phila. Acad. Nat. Sci., 187, 1864 (*Georgia*); Wood, Trans. Amer. Phil. Soc., 230, 1865.

Brachycybe lecontei Cope. Trans. Amer. Ent. Soc., 66, 1870 (*Jefferson Co., Tennessee*).

Platydesmus lecontei Bollman. Ent. Amer., 1, 1888 (*Little Rock, Arkansas*); McNeill, Bull. Brook. Soc. Nat. Hist., No. 3, 4, 1888.

Brachycybe rosea Murray. Econ. Ent. Aptera, 21, 1877 (*California*).

Platydesmus rosea McNeill. Bull. Brook. Soc. Nat. Hist., No. 3, 4, 1888.

Platydesmus californicus Karsch. Mittheil. Münch. Ent. Ver., 144, 1880 (*California*).

Segments rosy, with the lateral carinæ paler; legs, antennæ, and head principally yellow. Segments 35-55; first row of tubercles near the anterior margin along the middle of segment, but ending at the repugnatorial pore; second row arranged along posterior margin of segment. Lateral carinæ rounded or slightly irregular in outline.

Repugnatorial pore small; swelling small, placed near the middle and slightly sinuate. Anal segment armed with 4-8 setigerous tubercles. Male: Anterior pair of legs scarcely larger than the rest; claws normal. Anterior copulation foot 6-jointed, rather abruptly curved downwards and ending in a small claw; second copulation foot bent in between the first, 6-jointed, ending in four or five long and stiff bristles. Length of body, 8-21^{mm}.

Habitat.—Tallulah, Georgia; Little Rock and Magnet, Arkansas; Georgia (Wood); Jefferson County, Tennessee (Cope); California (Murray and Karsch).

I have been unable to find any differences between *P. lecontei* and *rosea* or *californicus*; especially Karsch's description of the latter, for Murray's description of *rosea* is so meager that it is almost impossible to identify his species with any of the others.

A careful study of the male copulation foot of the Eastern and Western forms may reveal some differences.

NOTES UPON A COLLECTION OF MYRIAPODS BELONGING TO THE
U. S. NATIONAL MUSEUM.

BY CHARLES H. BOLLMAN.

The following notes are a continuation of the paper which appeared in the Proceedings of the Museum for 1888 (pp. 343-350). In this part is given an account of the foreign material in the same collection.

The following is a key to the seven species of *Spirobolus* mentioned in this paper:

- a. Scobina absent (*subgenus Spirobolus*).
 - b. Repugnatorial pore opening on posterior division of segments....GRACILIS.—1.
 - bb. Repugnatorial pore opening on anterior division of segments.
 - c. Segments divided by a transverse sulcus.
 - d. Sulcus obliterated above; clypeal foveolæ 3+3 or 3+4...CALLIPUS.—2.
 - dd. Sulcus literated above; clypeal foveolæ 5+5.....BAHAMENSIS.—3.
 - cc. Segments not divided by a distinct transverse sulcus; foveolæ 2+2.
 - SURINAMENSIS.—4.
- aa. Scobina present (*subgenus Rhinocrinus*).
 - e. Anal segment produced into a large, flat mucro.
 - f. Anterior part of segments without a transverse sulcus; segments 51-56
 - CAUDATUS.—5.
 - ff. Anterior part of segments with a transverse sulcus; segments 46-48.
 - ZONIPUS.—6.
 - ee. Anal segments produced into a long, sharp mucro.....DUGESI.—7.

1. *Spirobolus gracilis*, sp. nov.

Diagnosis.—Related to *Spirobolus brandti* Karsch, but the dorsum of each segment smooth and sparsely punctate; anterior part of segments showing concentric striæ beneath; first segment with subacute sides which have three striæ.

Habitat.—Paramaribo, Surinam.

Type.—Female, U. S. Nat. Museum.

Description.—Female. Greenish black, posterior border of segments brownish; legs and antennæ dark. Slender, anterior segments scarcely attenuated. Vertex smooth, sulcus short and shallow; a depression between eyes; clypeus rather rough, not deeply excised, foveolæ 2+2, close together, above a transverse line. Antennæ short and thick, reaching second segment. Ocelli 43-45, the 6 rows forming a suboval patch. Segments smooth, sparsely punctate; posterior part with oblique striæ beneath; anterior part showing several concentric striæ beneath, but which above disappear under the preceding segment. Sides of first segment subacute, with 3 striæ; anterior border slightly excised. Repugnatorial pore moderate, placed about on the anterior

third of posterior half of segment. Anal segment obtuse, not projecting beyond valves; anal valves more strongly compressed than in *brandti*, densely punctate, especially above; anal scale slightly angulated. Legs short, not quite extending beyond sides of body. Segments 54-59. Length 50-55^{mm}; width, 4-4.3^{mm}.

This species is described from two specimens which I found amongst a large number of *S. surinamensis* without any locality; but as there was another vial of *surinamensis* labelled "*Surinam*" I am inclined to believe that this species is from the same locality. *S. vulvanus* Karsch, the only other American species having the repugnatorial pore on the posterior half of segment, has 3+3 or 4+4 clypeal foveolæ.

2. *Spirobolus callipus*, sp. nov.

Diagnosis.—Related to *Spirobolus brevicollis* Voges, but the clypeal foveolæ 3+3 or 4+3; segments 43-47; ♂ coxæ of 3, 4, 5, 6 pairs of legs produced; tarsæ without a polster.

Habitat.—Guanajuato, Mexico; Dugès.

Type.—Male and female, U. S. Nat. Museum.

Description.—Male and female. Ochraceous, posterior border of segments dark; antennæ and legs brown, joints ringed with white. Robust, anterior segments scarcely attenuated. Vertex moderately smooth, sparsely punctate and very slightly reticulated, sulcus short, not very shallow; clypeus transversely wrinkled, not very deeply excised, foveolæ 3+3 or 3+4, sulcus large, extending to opposite base of antennæ. Antennæ almost filiform, not extending beyond second segment; that of the female slightly shorter. Ocelli 30-36 in 5 or 6 series; patch subtriangular. Segments not striate or wrinkled above, but densely punctate; posterior part beneath with almost straight striæ, those on anterior part more oblique, forming an obtuse rounded angle in connection with those on posterior part. Sides of first segment subacute, no striæ except marginal; anterior border subexcised. Repugnatorial pore small, touching sulcus, which is bent forwards; behind pore on posterior part a deep sulcus. Anal segment subacute, not extending beyond anal valves; anal valves moderately margined, punctate; anal scale large, obtusely angled. Legs short, not extending beyond sides of body. Segments female, 43; male, 47.

Male less robust than female; coxæ of 3, 4, 5, 6 pairs of legs produced, that of third largest and curved backward, the rest short; coxæ of second pair large; tarsi without a pad or other markings. Copulation foot very different from that of *brevicollis*, resembling that of *S. americana-borealis*; ventral plate obtusely angled, one-half as high as foot; inner part of anterior foot pointed and covered with numerous short, round truncate tubercles, outer part with its end curved outwards, not tuberculate; posterior foot hook-like, pointed, its anterior surface tuberculate. Length, 58^{mm}; width, 6.5^{mm}.

Spiroboldus callipus is described from two specimens, male and female. This species, although agreeing with the Mazatlan species in many particular points, possesses a copulation foot which is very different.

3. *Spiroboldus bahamensis*, sp. nov.

Diagnosis.—Related to *Spiroboldus multiforus* Karsch, but larger and more robust; segments 48; above blackish, beneath yellow.

Habitat.—San Salvador, Bahamas; U. S. Fish Commission.

Type.—Male, U. S. Nat. Museum.

Description.—Male. Above shining black-brown, slightly greenish anteriorly; beneath yellowish, the yellow extending up along posterior border of segments, the black along anterior; vertex greenish; antennæ dark, legs paler. Robust, anterior segments attenuated. Vertex smooth, sulcus subcontinuous with clypeal; clypeus not deeply excised, foveolæ 5+5. Antennæ subclavate, reaching second segment. Ocelli 48, in 7 series, patch subtriangular. Segments visibly divided below repugnatorial pores, above which the dividing line fades out; smooth, sparsely and lightly punctate; obliquely striate beneath. Sides of first segment narrowed, subacute, a marginal sulcus. Repugnatorial pore moderate, opening on anterior part, touching sulcus, which is bent. Anal segment slightly pointed, not passing valves; anal valves margined, punctate; anal scale rounded, transverse. Legs moderate, scarcely extending beyond sides of body. Segments 48.

Male: Coxæ of third and fourth pairs of legs slightly produced, the latter longer and more pointed; coxæ of fifth pair much longer, flattened and curved over the coxæ of sixth pair which are shorter and blunt; coxæ of seventh pair produced into large and heavy lobes; tarsi of legs without a pad; sixth and seventh segments swollen beneath. Length, 70^{mm}; width, 8.5^{mm}.

Described from an adult male. In the pattern of coloration this species shows a great variation from the others of the genus. No doubt when it is compared carefully with specimens of *multiforus* not much resemblance will be found between the two.

3. *Spiroboldus surinamensis*, sp. nov.

Diagnosis.—Related to *Spiroboldus dominicæ* Pocock. Segments without a transverse sulcus, their surface with numerous horseshoe-like depressions.

Type.—Male and female, U. S. Nat. Museum.

Habitat.—Paramaribo, Surinam.

Description.—Reddish brown, antennæ, legs and posterior border of segments brighter. Moderately slender, anterior segments slightly attenuated; vertex rough, sulcus short, ending in a slight depression; clypeus rather deeply excised, sulcus deep, foveolæ 2+2, distant. Antennæ short and thick, reaching past first segment. Ocelli 35–45, in 6 or 7 series; patch subtriangular. Segments not distinctly divided,

a depression occupying sulcus; rough, anterior part closely obliquely striate beneath, above, especially on anterior part, and along the depression, numerous horseshoe-like depressions. Repugnatorial pore large, placed on anterior part, a deep sulcus behind. Anal segment slightly angulated, not passing valves; anal valves scarcely margined, sparsely punctate; anal scale almost transverse. Legs extending slightly beyond sides of body. Segments, female, 51-53; male, 51.

Male: Less robust than female; coxæ of second pair of legs large, coxæ of other legs not produced; femur with a slightly swollen ovate knob; last tarsal joint with an elongate sucker; sixth and seventh segments swollen beneath; ventral plate of copulation foot convex, one-half as high as foot, apex bifid; anterior copulation foot short and heavy, outer part plain, curling around inner, end slightly pointed, inner part heavy, its inner margin slightly concave, a small wing on its anterior surface; posterior copulation foot somewhat hook-like, its end rounded and slightly bifid; on the inner side are three lobes; the first is large and moderately flat, with its entire surface granulated; the second is spine-like and arises just above the first; it is twisted, tapering, with its outer surface very rough; it ends near the beginning of third, which is flat and bent basalwards, its end concave. Length, 40-50^{mm}; width, 4-5^{mm}.

This species seems to bear little resemblance to any other from America. It probably comes nearest to *S. dominica*, as shown by the form of the posterior copulation foot, but the rest of the copulatory organ is entirely different.

In the collection is one specimen labelled "Surinam," and a very large number in another vial without any locality, but which I suppose are from the same place.

5. *Spirobolus caudatus* Newport.

Spirobolus caudatus Newport. Ann. and Mag. Nat. Hist., 269, 1844 (*Demerara*); *Julus arboreus* Saussure, Linn. Ent., 331, 1859 (*St. Thomas*).

Segments, male, 51-53; female, 51-56; ocelli 40-55, in 6-8 series. Male: Coxæ of none of the legs noticeably produced or any other markings of note about the legs. Ventral plate of copulation foot higher than anterior part of first foot, but not so high as posterior part; its end rather suddenly pointed, slightly truncate. Anterior or inner part of anterior copulation foot pointed; end of posterior part rather blunt and swollen. Posterior foot long and slender, curved outwards and backwards, the only part of copulation foot projecting out of opening; bifid, the upper branch compressed, especially towards the end which is slightly sinuate, its lower angle with a short, slender spine; lower branch lanceolate, not as long as upper, depressed, sides very thin and transparent, edges entire or very slightly sinuate. Ventral part of the anterior half of seventh segment produced into a blunt, triangular lobe.

In the collection are a number of specimens which were obtained by the U. S. Fish Commission at St. Thomas.

6. *Spirobolus zonipus*, sp. nov.

Diagnosis.—Related to *Spirobolus facatus* Karsch, but the anterior part of segments with a transverse sulcus; segments visibly divided; legs shorter; greenishblack, legs brown, joints ringed with paler.

Type.—Female, U. S. Nat. Museum.

Habitat.—Paramaribo, Surinam.

Description.—Dark greenish black, posterior border of segments yellowish; antennæ dark; legs brownish, last tarsal joint pale, others ringed. Rather slender, anterior segments scarcely attenuated. Vertex smooth, sulcus deep, subcontinuous with clypeal; clypeus not deeply emarginate, sulcus small, foveolæ 2+2. Antennæ short and thick, reaching second segment. Ocelli 40–45, in 7 series; patch subtriangular. Segment smooth, sparsely punctate; anterior part with a transverse sulcus which ends in under pore, not striate beneath; posterior part with short striæ beneath. Sides of first segment rounded, not acute, a marginal sulcus. Repugnatorial pore small, placed on anterior part; sulcus bent. Anal segment produced into a wide, flat, obtusely angled mucro, which passes beyond valves; anal valves scarcely margined, not punctate; anal scale large, obtusely angled. Legs not quite extending beyond sides of body. Segments 46–48. Length, 43–50^{mm}; width, 4–5^{mm}.

Described from several females most of which are broken; they were found in the vial containing *S. surinamensis*, without any locality.

7. *Spirobolus dugesi*, sp. nov.

Diagnosis.—Related to *Spirobolus latus* Karsch, but the segments very plainly segmented; striæ not extending beyond the length of legs; shining bluish black.

Type.—Male, U. S. Nat. Museum.

Habitat.—Guanajuato, Mexico; Dugès.

Description.—Dark shining bluish black, posterior border of segments paler; antennæ and legs reddish brown. Slender, anterior segments scarcely attenuated. Vertex smooth, sulcus very shallow; clypeus moderately emarginate, foveolæ 2+2, sulcus shallow, extending to opposite bases of antennæ; between antennæ are two oblique sulci (//); antennæ short, clavate, reaching second segment. Ocelli only represented by a black area, in which are indistinct traces of ocelli; colored area subcircular, partly covered by first segment. Segments rather deeply divided, smooth; striæ of posterior part not extending beyond length of legs. Lateral border of first segment rounded, a very short marginal sulcus. Spine of anal segment large and long, tip slightly recurved; anal valves produced in under spine, very strongly margined, a margin extending around anal scale; anal scale large, obtusely angled. Repugnatorial pore rather small, deep set; behind them is a deep sulcus on posterior part of segments. Legs short, not extending beyond sides of body.

Male: Coxæ of third and fourth pairs of legs produced into short, blunt, rounded lobes, that of the third more slender; femur of third and fourth with an oval swelling, that of third largest; ventral part of the posterior half of seventh segment produced into a short triangular plate. Segments 50. Length, 55^{mm}; width, 5^{mm}.

This species is described from a broken male specimen. The copulation foot was not taken out, but what I could see resembles that of *caudatus* and *heilprini*. I have named this species after its collector, Mr. A. Dugès.

8. *Spirostreptus otomitus* (Saussure).

1859.—*Julus otomitus* Saussure. Linn. Ent., 330 (*Cordova, Vera Cruz, San Andres, Tuxila, Mexico*).

1884.—*Spirostreptus otomitus* Preudhomme de Borre. Ann. Soc. Ent. Belg., 69.

Acc. 19811, Truxillo, Honduras; C. H. Townsend. ♀.

Number of segments, 63; ocelli 42–5; antennæ reaching third segment; length, 55^{mm}; width, 3.2^{mm}.

9. *Spirostreptus surinamensis* Brandt.

1841.—*Spirostreptus surinamensis* Brandt. Recueil, 108 (*Surinam*).

1847.—*Julus surinamensis* Gervais. Aptères, iv, 185.

Acc. 14420, New Granada, West Indies; U. S. Fish Comm. Male and female.

Dark brown, anterior part of segments yellowish; antennæ and legs reddish brown. Robust, anterior segments somewhat attenuated. Vertex, especially along margin of first dorsal plate, rough, longitudinal and transverse sulci distinct; clypeus very rough, emargination shallow. Antennæ reaching third segment in both sexes. Ocelli 65–70, in 7 series, arranged in an elongate-oval patch. Segments scarcely segmented, appearing smooth and shining, but densely and very lightly punctate; anterior part with a few concentric striæ; posterior striate beneath, striæ disappearing before pore and forming a row of dot-like marks. Lateral part of first segment tetragonal, slightly produced anteriorly in the male, about 7 distinct sulci. Anal segment obtusely angled, a transverse sulcus; anal valves strongly margined, convex; anal scale almost transverse. Repugnatorial pore small, placed about on anterior third of posterior part. Legs long, extending beyond sides of body. Segments, male, 62; female, 65.

Male: Legs stouter than those of female; first and second tarsal joints with pads; these disappear about the thirtieth segment; ventral plate of copulation foot very small, convex, sulcate, its base concave; anterior copulation foot curled around basal part of posterior, which runs along its anterior surface, end expanded and rounded, with a black, short, pointed, upward and backward projecting lobe at its upper exterior angle, its anterior surface corrugated, that part which curls around posterior foot corrugated and with a few short bristles; posterior foot appearing at upper third of anterior, decurved along its outer edge,

spirally twisted, end expanded, very thin and sinuate; near the point where the foot is decurved there is on its anterior surface a sharp, stout, triangular, downward pointing spine; from the posterior side of foot may be seen a small hooked spine springing from the inner side of fan-shaped end.

The collection contains two specimens which are so broken that I was unable to obtain good measurements.

10. *Orthomorpha coarctata* (Saussure).

(*Orthomorpha*, nom. gen. nov. for *Paradesmus* Saussure, which is preoccupied by *Paradesmus* Corda, Polyg.)

1860.—*Polydesmus coarctatus* Saussure. Myr. Mex., 39 (Cayenne).

1881.—*Polydesmus* (*Paradesmus*) *vicarius* Karsch. Troschel's Archiv f. Naturgesch., 38 (Mayotti, Anjoani, Africa).

1887.—*Strongylosoma poeyi* Bollman. Ent. Amer., 82 (Cuba).

Two specimens (male and female) were found in a vial containing *Spirobolus surinamensis*, which were identical with a specimen in another vial from Paramaribo, Surinam. As these specimens are from the same region where the types of *coarctatus* were from, I have not hesitated to identify them with that species; in fact, if I had no males the locality would be the principal means of identifying, as it is impossible to separate *gracilis*, *coarctatus*, and *dasy*s by any other point than that of the male genitalia. My identifying these specimens with *coarctatus* and considering *vicarius* and *poeyi* identical, as shown by the copulation foot of the males, has led me to study the different species belonging to this group. Herebefore *coarctatus* has been considered identical with *Fontaria gracilis* Koch, from Puloos, Austria; but as proven by Latzel's figure* of the copulation foot of Austrian specimens, this can not be. *Coarctatus* and *gracilis* have also been considered identical with a certain species from Borneo, Timor, Alinda and Viti-Levu, and a few other East Indian localities; but even these specimens as shown by Karsch's figure† of the male copulation foot, although more allied to *gracilis* than *coarctatus*, are not identical and represent an undescribed species (*O. Karschi*, sp. nov.). On account of these changes and differences the species of *Orthomorpha* should stand as follows:

1. *Orthomorpha coarctata* (Saussure) (= *vicarius* † = *poeyi*). Habitat: West Indies, Surinam, Brazil, and Africa.
2. *Orthomorpha beaumonti* (Le Guillon) (= *P. spectabilis* Karsch). Habitat: Borneo and Java.
3. *Orthomorpha pekinensis* (Karsch). Habitat: Peking, China.
4. *Orthomorpha flavolimbata* (Guldensteeden and Egeling). Habitat: Japan.

* Die Myr. Öst.-Ungar. Monarch., Taf. vi, fig. 70.

† Troschel's Archiv f. Naturgesch., Taf. III, fig. 7, 1881.

‡ *P. vicarius* Karsch may not be identical with *coarctatus*, as his figure of the male genitalia only shows two points, while in *coarctatus* there are three; but as they are small, it is very probable he did not observe the third.

5. *Orthomorpha karschi*, sp. nov. Habitat: East Indies and part of Polynesia.
 6. *Orthomorpha gracilis* (Koch). Habitat: Austria (*only found in a few hothouses, and seems to have been introduced*).
 7. *Orthomorpha dasys* Bollman. Habitat: Baltimore, Maryland (*introduced, found only in hothouses*).

11. *Polylepis klugii* (Brandt).

(*Polylepis*, nom. gen. nov. for *Pachyurus* Saussure, which is preoccupied by *Pachyurus* Agass., Pisces, 1829.)

Acc. 18478, Guanajuato, Mexico; Dugès, ♀.

The two American species should now stand thus:

1. *Polylepis klugii* (Brandt).
2. *Polylepis abstrusus* (Karsch).

12. *Fontaria fraterna* (Saussure).

1859.—*Polydesmus fraternus* Saussure. Linn. Ent., 322 (*Mexico*).

1881.—*Polydesmus (Fontaria) angelus* Karsch. Troschel's Archiv f. Naturgesch., 39 (*Puebla, Mexico*).

Acc. 17139, Puebla, Mexico; male and female.

These specimens agree in all points with Saussure's description of *fraternus*.

P. angelus may be different (l. 50^{mm}), but its copulation foot is identical with that of the specimens before me, which are the same size of *fraternus*.

13. *Fontaria otomita* (Saussure).

1859.—*Polydesmus otomitus* Saussure. Linn. Ent., 322 (*Cord. va, Mexico*)

Acc. 18478, Guanajuato, Mexico; Dugès; 4 males, 1 female.

Copulation foot of male subsimilar to that of *fraterna*. Apex bifid; angle between them greater than a right; the upper lobe smallest and pointed; the lower recurved, broader, subtruncate, and is the branch through which the spermatozoa are conveyed; not far below the apex on the interior side is a small triangular spine. Basal spine rather short, cylindrical, its apex curved upwards, separated from rest of foot by a wide angle. Basal part of foot with short, almost spine-like hairs; a few at the upper interior angle much longer.

14. *Linotænia chionophila* (Wood).

No. 83, U. S. Nat. Museum; Bering Island; Stejneger.

One small broken male, which I have been unable to separate from the American species. Pairs of legs, 43.

15. *Scolopendra morsitans* Linnæus.

Acc. 14150, Paramaribo, Surinam; U. S. Fish Commission.

16. *Scolopendra heros* Girard.

1860.—*Scolopendra azteca* Saussure. Myr. Mex., 124.

1860.—*Scolopendra otomita* Saussure. Myr. Mex., 125.

1860.—*Scolopendra maya* Saussure. Myr. Mex., 126.

Acc. 18478, Guanajuato, Mex.; Dugès.

A comparison of this specimen with Saussure's Mexican species has led me to regard the above as synonyms of *heros*.

17. *Scolopendra pachypus* Kohlrausch.

Acc. 19811, Truxillo, Honduras; C. H. Townsend.

One specimen. It only differs from *pachypus* in size; length, 85^{mm}. All the known *pachypus* are not more than 65^{mm} long.

18. *Scolopendra nicaraguensis*, sp. nov.

Diagnosis.—Related to *Scolopendra heros* Girard but the anal pair of legs thicker and shorter; first 15 dorsal plates immarginate; 12st anal plate shorter and wider.

Type.—Acc. 19099, U. S. Nat. Museum.

Habitat.—Nicaragua; Dr. Bransford.

Description.—Dorsal plates dirty yellowish green; legs and under parts yellow; antennæ pale; prehensorial pair of legs dark orange. Moderately robust, smooth, not punctate. Head suboval, punctate; a longitudinal median depression; no sulci. Antennæ rather short, articles 21–24, the first four not hirsute. Prosternal teeth 4+4, rather large, inner coalesced; coxal tooth large, unarmed. The first 15 dorsal plates immarginate; sulci deep; posterior borders not wrinkled. Sulci of ventral plates well marked; last ventral plate short and wide, sides converging, posterior margin truncate. Second tarsal joints of all the legs except anal armed. Anal pair of legs short and thick; spines large, 5–6 in two rows on the superior interior surface, 2 or 3 each on the inner and inferior-interior surfaces, beneath 6–10 in two rows; apical process slender, bifid. Posterior margin of anal pleuræ slightly convex, apex with 3 or 4 spines, also 1 marginal. Length, 90^{mm}.

The collection contains three specimens of this species, of which one is in a good condition. It is distinguished from *pachypus* by having the anal legs less crassate; from *pernix* by having the spines of anal legs less numerous.

19. *Scolopendra hirsutipes*, sp. nov.

Diagnosis.—Related to *Scolopendra heros*, but the tarsi of anal and penultimate pairs densely and shortly hirsute; spines on the upper interior surface of femora 3 or 4 in two series.

Type.—U. S. Nat. Museum.

Habitat.—West Indian fauna.

Description.—Yellowish brown, posterior margin of dorsal plates

green; legs and antennæ yellow. Robust, smooth, sparsely punctate. Head suboval, punctate; sulci absent. Antennæ long, articles 25-27, crassate at base, the first 5 not hirsute. Prosternal teeth 4+4, rather large, inner coalesced; coxal tooth large, inner margin slightly armed. The first four dorsal plates immarginate, the first without sulci; posterior border not wrinkled; sulci of ventral plates deep; last ventral plate rather short and wide; sides straight, converging; posterior border emarginate. Second tarsal joint of all legs except anal pair armed. Anal pair of legs rather long, stout; spines large; superior-interior margin with 3 or 4, which are arranged in two series; 1 within; 2 on the inferior-interior surface; 5-7 beneath and arranged in two or three series; apical process trifid; tibiæ and tarsi pilose, the latter more densely; tarsi of penultimate pair also pilose; anal pleuræ with its posterior margin concave, pilose; apex rather short, with 4 spines; a marginal spine. Length, 100^{mm}.

One specimen without any locality, but as all others unlabeled in the collection seem to be from Surinam, I suppose this specimen is from the same place.

20. *Scolopendra sanatillæ*, sp. nov.

Diagnosis.—Related to *Scolopendra occidentalis* Meinert, but differing as follows: Antennæ not strongly crassate at base; anal legs short and thick; spines along upper interior side of femora 5 or 6, in two series; along inner side 2-4, in one or two series; beneath 5-7, in two series; apical process absent or, when present, with the spine entire or bifid. The first 8 or 10 dorsal plates not margined.

Type.—Acc. 19099, U. S. Nat. Museum.

Habitat.—Sanatilla or Swan Island, Caribbean Sea; U. S. Fish Commission.

This species is described from eight rather badly preserved specimens.

21. *Scolopendra crudelis* Koch.

Acc. 17400, San Salvador, Bahama Islands; U. S. Fish Commission.

Numerous specimens.

22. *Cormocephalus*, sp. ?

In the collection is a mutilated specimen without any definite locality.

23. *Lithobius sulcipes* Stuxberg.

1876.—*Lithobius sulcipes* Stuxberg. Öfvers. Vet.-Akad. Forh., 21 (found at various places around mouth of Jenisey River, Siberia).

No. 83. U. S. Nat. Museum, Bering Island; Stejneger.

24. *Lithobius stejneri*, sp. nov.

Diagnosis.—Related to *Lithobius sulcipes* Stuxberg, but the claw of ? genitalia tripartite; coxal pores more numerous.

Type.—Nos. (92 and) 93, U. S. Nat. Museum.

Habitat.—Bering Island, Topor Rof Island, and Gavaus Kaya Topka, Copper Island; Stejneger.

Description.—Yellowish brown, head and antennæ almost orange. Robust, moderately smooth, head of about equal length and width. Antennæ 20-jointed, short. Ocelli 12–18, in four or five series. Prosternal teeth 2+2. Coxal pores 3, 4, 3, 3–4, 5, 5, 4, round and large. Spines of first pair of legs 0, 1, 1 or 1, 1, 1; of penultimate pair 1, 3, 2, 1–1, 3, 3, 2; of anal pair 1, 3, 2, 6; spine at base of claw of penultimate pair two-thirds as long as claw. Anal legs of male normal; claw of female genitalia wide and short, tripartite, middle lobe only slightly larger, spines 2+2, inner slenderer and shorter. Length, 8–11^{mm}.

This species is described from a number of specimens from the above localities. I have the pleasure of naming this species after Dr. Leonhard Stejneger, of the U. S. Nat. Museum, who collected the specimens in 1882 and 1893.

25. *Lithobius glabratus* Koch.

Switzerland; E. D. Cope. Female.

26. *Lithobius forficatus* (Linnaeus).

Switzerland; E. D. Cope. Several specimens, male and female.

27. *Scutigera flavipes*, sp. nov.

Diagnosis.—Similar to *S. guildingi* Newport, but the legs not banded, pure yellow; stomata not black, the region on each side whitish.

Type.—Acc 17400, U. S. Nat. Museum.

Habitat.—San Salvador, Bahamas; U. S. Fish Commission.

Description.—Blackish brown, a broad median yellow dorsal band, lateral parts of dorsal plates paler; stomata not black, the swelling on each side whitish, legs and antennæ yellow, not banded; median part of head yellow, with an irregular black line on each side. Body narrow, more strongly attenuated anteriorly; rather strongly convex. Dorsal plates rather smooth, spines weak, less prominent on anterior plates, not forming any prominent median dorsal series; lateral margins rather strongly elevated, hardly crenulate, spines more strongly developed on posterior segments; posterior margin not much produced nor deeply sinuate; last dorsal plate rather small, sides converging, posterior border entire. Cephalic plate with a triangular impression, anteriorly sulcate, longer than wide. Antennæ slightly more than twice as long as body. Carinæ of legs not very prominent, spines not numerous. Forceps of female genitalia mutilated, rather stout, a small bunch of stiff hairs on the inner side of the first article. Length of body, 25^{mm}; width (of fourth dorsal plate), 3.5^{mm}.

Described from a female of which the anal legs are lost and nearly all the others broken off.

INDIANA UNIVERSITY, April 15, 1889.

V.

OMISSIONS AND CORRECTIONS.

Page 43. *Lithobius* "*tyrannicus*," as originally spelled (*Proc. U. S. Nat. Mus.*, 1887, p. 626), is evidently a misprint, and it appears from Mr. Bollman's manuscripts that he intended to name the species "*L. tyrannus*." The name ought to be changed accordingly.

Page 66. Add the descriptions (reprinted from *Entomol. Amer.*, II, 1887, p. 229) of the following two species:

Family POLYDESMIDÆ Leach.

Genus PARADESMUS Saussure.

Paradesmus evides sp. nov.

Coloration as in *P. erythropygus*. Form more slender. Vertex smooth, median sulcus continuous, not much excavated between the antennæ. First segment more rounded. Inner angle of the lateral carinæ not serrated. Genitalia entirely different, short, robust, pilose, scarcely bent, grooved above at the end, and divided into two blunt lobes.

Length of body, 26^{mm}; width, 4^{mm}.

Habitat.—Winona, Minn.

I have examined one whole specimen and a number of broken ones collected by Prof. J. M. Holzinger. This species can be easily separated from *erythropygus* by the markings of the vertex, the smooth lateral carinæ and especially by the male genitalia.

Family GEOPHILIDÆ Leach.

Genus GEOPHILUS Leach.

Geophilus glaber sp. nov.

Olivaceous; head, antennæ, and mouth parts brown, an indistinct black, median dorsal line. Robust, attenuated posteriorly, not pilose, punctate; sternum wider than long; coxæ longer than wide (7:5), armed; claw moderately curved, teeth weak.

Cephalic plate large, narrowed behind, longer than wide (10:8); frontal plate present; basal plate more than twice as wide as long (10:4), partly covered by the cephalic plate. First joints of antennæ long. Anterior spiracle very large, oval; posterior small, nearly circular. Dorsal plates bisulcate; anterior predorsal plate small, posterior large; ventral plates with a median sulcus. Posterior coxæ not much swollen, pores above and below, large and small. Last ventral plate large, sides rounded, not converging much. Anal pore large. Last pair of feet of female slender. Pairs of feet of the female, 53–55.

Length of body, 50–53^{mm}; width, 2.5^{mm}.

Habitat.—Ukiah, Cal.

I have examined three females collected by Mr. James K. Burke.

Page 106, read *Scoterpes* instead *Scotherpes*.

Page 118, footnote, read "Karsch" instead "Kohlrausch."

Page 119, insert, after *Spirobolus californicus*:

Spirobolus hebes Bollman. Ann. N. Y. Ac. Sc., iv, 31 (1887); Entom. Amer., ii, 228 (1887)—California.

Page 119, insert after *Parajulus diversifrons*:

Parajulus ectenes Bollman. Proc. U. S. Nat. Mus., 617 (1887).—North Carolina.

Page 120, insert after *Parajulus pilosicutus*:

Parajulus rugosus Bollman. Entom. Amer. iii, 81 (1887).—Pennsylvania, Indiana.

Page 120, insert after *Parajulus varius*:

Parajulus zonatus Bollman. Proc. U. S. Nat. Mus., 618 (1887).—Washington.

Page 121, read *Scoterpes* instead *Scotherpes*.

Page 128, add as a synonym of *Lithobius bilabiatus*:

Lithobius tuber Bollman. Proc. U. S. Nat. Mus., 626 (1887).

Page 129. *Lithobius similis* Bollman is synonymous with *L. trilobus* Bollman (see p. 92).

Page 132, read *Fontaria virginiensis brunnea* instead *Fontaria virginiensis castanea*.

[The following paper by Mr. Bollman, published shortly before his death, was accidentally overlooked by the editor. It should follow page 111.]

[From Proc. Ac. Nat. Sc. Phil., 1889, pp. 127-129.]

NOTES ON A SMALL COLLECTION OF MYRIAPODS FROM THE BERMUDA ISLANDS.

BY CHARLES H. BOLLMAN.

The following species, which were collected by Prof. Heilprin in the summer of 1888, although limited in number, show the diverse origin of the Myriapod fauna of the Bermuda Islands. Heretofore *Julus moreleti* has only been found in the Azores Islands; *Mecistocephalus guildingii* in the West Indies; *Lithobius lapidicola* in Europe, and *Spirobolus heilprini*, by having scobina, shows its West Indian and not African origin, for all found in the latter continent belong to the subgenus *Spirobolus* from which scobina are absent.

These four species, including a specimen of *Scolopendra subspinipes* which I have in my collection, are all that as yet have been reported from the Bermuda Islands.

I desire to express my thanks to Prof. Angelo Heilprin, of the Academy of National Sciences of Philadelphia, for the privilege of examining this collection of Myriapods.

1. *Spirobolus* Heilprini, sp. nov.

Diag.—Related to *Spirobolus flavocinctus* Karsch, but the segments very distinctly segmented, anterior part not striate; antennae and legs reddish brown.

Type.—Museum Academy National Science, Philadelphia. Greenish-black, posterior margin of segments rufous, antennae and legs reddish-brown. Slender, anterior segments scarcely attenuated. Vertex

smooth, sulcus shallow; clypeus only moderately emarginate, foveolæ 2+2, distant, sulcus sub-continuous with vertical. Antennæ rather slender, reaching second segment in both sexes. Ocelli arranged in a suboval or subtriangular patch, 45-55, in seven or eight series. Segments not smooth; posterior parts above with short and wavy, beneath with short and straight striae; median part with a transverse sulcus which ends above repugnatorial pore; posteriorly above with a few striae, beneath almost smooth or with a few weak obliquestriae. Lateral lobes of first segment rounded, a weak marginal sulcus. Anal segment with a flat, thick mucro, which passes beyond valves; anal valves weakly margined, not punctate; anal scale obtusely angled. Repugnatorial pores placed on anterior division, small and rather deep set. Legs extending slightly beyond sides of body. Male: Slenderer than female; coxæ of 3d, 4th, 5th, pairs of legs produced into short lobes; tibia and first two tarsal joints beneath with an oval roughened lobe; joints of anterior legs short and thick, third and fourth pairs of legs strongest; tarsi without a pad; ventral plate of copulation-foot triangular as high as foot, its base not concave, its posterior surface ridged, thus making the plate of a triangular-pyramidal form; anterior part of first foot not as high as ventral plate, triangularly pointed, the ventral plate ridge separating them; posterior part of anterior foot as high as ventral plate, its apex with a short blunt lobe on its posterior surface; posterior copulation-foot bifid, projecting out of the opening, the upper branches flattened and fan-shaped at its end, which is convex; lower branch elongate-lanceolate, its upper edge serrate, basal part of foot rectangular and white, while the upper part is yellowish. Segments male, 46; female, 44. Length 52 mm, width 3.8 mm-4.2 mm.

This species is described from six broken and badly preserved specimens. In the type of copulation-foot it resembles that of *arboreus* and *dugesi*, and it is very probable that all the species belonging to this group have the same type, i. e., the ventral plate triangular and as high as posterior part of anterior part, while the anterior part is less, the posterior foot bifid and projecting out of the opening.

I have named this species after Prof. Angelo Heilprin, of the Academy of Natural Sciences of Philadelphia.

2. *Julus Moreleti* Lucus.

In the collection are a number of female specimens which I refer to this species. It has only been found in the Azores Islands.

These specimens have the striae of the anterior division of the segments not so irregular as represented in Porath's figure of this species.*

Segments 42-49. Adult almost black, legs reddish brown; young dusky, with a lateral row of black spots and a medium black dorsal line, bordered with yellowish.

* *Am. nagra* Myriopoder frau Azorerna. Öfver. Kongl. Vet. Akad. Forh., Stockh., 820, 1870.

3. *Mecistocephalus guildingii* Newport.

Three specimens. These are so moulded and broken that it is almost impossible to make much out; but in the characters of the head, they seem to be identical with the West Indian species.

4. *Lithobius lapidicola* Meinert.

Two specimens, male and female. Joints of antennæ 26; ocelli 8 or 9, in three series; coxal pores male 2, 3, 3, 2, female 3, 4, 4, 3; spines of first pair of legs, 0, 1, 1; of penultimate pair, 1, 3, 3, 1; of anal pair, 1, 3, 2, 0; spines of female genitalia stout, claw very distinctly tripartite, middle lobe not much longer; length male 7^{mm}; female 8^{mm}.

It is very probable that these specimens are not identical with *L. lapidicola*, a European species; but as they are rather mutilated I have hesitated to describe them as new.

VI.

INDEX OF SCIENTIFIC NAMES.

	Page.
Acanthiulus	139, 156
Acanthodesmus	141, 160
Agathotus, n. g.	166
Allajulus	138
Alloporus	156
Anamorpha	163, 164
Andrognathidæ	136, 155, 186
Andrognathinæ	154, 155
Andrognathus	118, 136, 155, 187
corticarius	82, 90, 118, 188
Archilithobius	22, 32, 72, 82, 85, 128, 164
Archilulus	138
Asanada	165, 171
Atractosoma	158
Blaniulus	157
Bothriogaster	167
Bothroplys	128, 129, 130
Brachycybe	117, 137, 155, 188
lecontei	189
rosea	189
Brachydesmus	160
Brachyiulus	138
Brachypaurops	162
Branchiostoma	127, 143, 166, 171, 176
celer	176
Branneria, n. g.	158
Callipodidæ	159
Callipodoideæ	155, 158
Callipus	120, 155, 159
Callipus lactarius	106, 145
Cambala	58, 120, 137
annulata	58, 61, 73, 90, 105, 145
annulata minor, n. subsp.	105
lactarius	145
Cambalinæ	156, 157
Campodes	120, 140, 158
flavicornis	73, 83, 91, 96, 106, 120, 150, 181, 183
fuscicornis	150
Campodinae	157
Cermatia	130
coleoptrata	149
Cermatobidæ	164
Cermatobius	164
Chætaspis, n. g.	68, 122, 159
albus, n. sp.	68, 74, 81, 108
Chætechelyne	166
Chilognatha	118, 132, 154
Chilopoda	124, 163

	Page.
Chomatobius	126
Chordeuma	121, 140, 158
Chordeumidæ	140
Chordeumiden	155
Chordeuminae	157, 158
Collaria	165, 171
Colobognatha	117, 154
Cormocephalinae	170
Cormocephalus	165, 171, 199
Craspedosoma	158
catalogue of species	120
atrolineatum, n. sp.	35, 183
bollmani	36
carinatum, n. sp.	74, 83, 158
flavidum, n. sp.	74
glomeratum	36
Craspedosomadæ	140
Craspedosomidæ	120, 140, 155, 157
Craspedosominae	157, 158
Cryptodesmoidea	141
Cryptodesmus	141, 160
Cryptopinae	165, 168
Cryptops	127, 128, 165, 168, 169
asperipes	78, 127, 147, 169
hyalinus	77, 82, 84, 85, 92, 99, 110, 127, 147, 169
milberti	78, 127, 147, 169
posticus	147, 169
sexspinosus	147, 177
sulcatus	78, 127, 147, 169
Cryptopsii	168
Cryptotrichus	120, 140, 150, 158
caesiannulatus	73
Cupipes	165, 171
Cyclodesmus	161
Cyphodesmus	161
Cyrtodesmus	161
Dacetum	143, 166, 171
Dignathodon	167
Diploilulus	138
Diplopoda	117, 153
Dolichostenus	136
Dolistenia	136, 187
Dolistenus	136, 155, 187
Epimorpha	163, 164
Eremops, nom. g. n.	165, 168
Etymochila, new class	153, 163
Eucorybas	165, 171
Eulithobius	30, 33, 103, 130, 164

	Page		Page
<i>Eurypauropodidae</i>	124	<i>Gervaisia</i>	161
<i>Eurypauropodinae</i>	102	<i>Glomeridae</i>	161
<i>Eurypauropus</i>	124, 162	<i>Glomeridesmidae</i>	159
<i>spinosus</i>	109, 124	<i>Glomeridesmus porcellus</i>	159
<i>Euryurus</i>	160	<i>Glomeridia</i>	142
catalogue of species.....	123	<i>Glomerinae</i>	161
<i>evides</i>	74, 123, 184	<i>Glomerinae</i>	142
<i>erythropygus</i>	83, 91, 108, 151	<i>Glomeris</i>	161
<i>erythropygus australis</i> , n. subsp.....	98	<i>Glyphiulus</i>	156
<i>maculatus</i>	151	<i>Goniobregmatus</i>	167
<i>Fontaria</i>	160	<i>Haasia</i> , n. subg.....	158
catalogue of species.....	123	<i>Helminthomorpha</i>	154, 155
<i>angelus</i>	197	<i>Hemilithobius</i>	33, 129, 164
<i>butleri</i>	107	<i>Henicops</i>	32, 130, 164
<i>butleriana</i> , n. sp.....	108, 152	<i>chilensis</i>	116
<i>coriacea</i>	107, 152	<i>fulvicornis</i>	78, 130, 184
<i>crassicutis</i>	96, 149	<i>Heterostoma</i>	143, 166, 171
<i>evides</i> , n. sp.....	28, 91	<i>Heterostominae</i>	170
<i>fraterna</i>	197	<i>Hexaglena</i>	117, 137, 154, 186
<i>georgiana</i> , n. sp.....	96	<i>cryptocephala</i>	187
<i>indiana</i> , n. sp.....	107	<i>Himantariinae</i>	166, 167
<i>montana</i> , n. sp.....	39	<i>Himantarium</i>	125, 167
<i>oblonga</i>	152	catalogue of species.....	125
<i>otomita</i>	197	<i>tæniopse</i>	112
<i>pulchella</i> , n. sp.....	94	<i>Hirudisoma</i>	137, 154, 186
<i>rileyi</i> , n. sp.....	97	<i>Icosidesmus</i>	160
<i>rubromarginata</i> , n. sp.....	39	<i>Isobatus</i>	138
<i>tallulah</i> , n. sp.....	97	<i>Julida</i>	45, 59, 62, 118, 155, 156
<i>tenesseeensis</i> , n. sp.....	91	list of species.....	59
<i>trimaculata</i>	39	<i>Julides</i>	140
<i>virginiensis</i>	75, 107, 148, 152	<i>Julinae</i>	156, 157
<i>virginiensis brunnea</i> , n. var.....	20, 132, 182, 184	<i>Juloidae</i>	156
<i>Geophilidae</i>	124, 164, 166	<i>Julomorpha</i>	157
<i>Geophilinae</i>	166	<i>Juluidea</i>	155
<i>Geophilus</i>	126, 166	<i>Julus</i>	45, 119, 120, 123, 124, 138, 157
table of species.....	40	list of species.....	59
catalogue of species.....	124	catalogue of species.....	118
<i>attenuatus</i>	110, 148	<i>americana borealis</i>	146
<i>bipuncticeps</i>	41, 99, 148, 182, 184	<i>americanus</i>	146
<i>brunneus</i>	109	<i>annulatus</i>	58, 145
<i>californiensis</i> , n. sp.....	41	<i>arboreus</i>	193
<i>cephalicus</i>	41, 148	<i>burkel</i> , n. sp.....	20, 131
<i>foveatus</i>	98, 109, 184	<i>cassius</i>	73
<i>georgianus</i>	41, 148	<i>canadensis</i>	55
<i>glaber</i> , n. sp.....	201	<i>ellipticus</i> , n. sp.....	20, 132, 181
<i>gracilis</i>	184	<i>hortensis</i>	106
<i>huronicus</i>	99	<i>impressus</i>	52, 56, 144, 183
<i>indiana</i>	109	<i>lactarius</i>	145
<i>latro</i>	41	<i>lineatus</i>	47, 146
<i>mordax</i>	41	<i>marginatus</i>	48, 145
<i>occidentalis</i>	42	<i>minutus</i>	46, 73, 146
<i>okolona</i> , n. sp.....	41, 77	<i>montanus</i>	35, 55
<i>oweni</i> , n. sp.....	40, 109	<i>otomitus</i>	195
<i>perforatus</i>	41, 77, 84	<i>owenii</i> , n. sp.....	45, 65
<i>rubens</i>	109, 148	<i>pennsylvanicus</i>	54
<i>salemensis</i> , n. sp.....	71, 77, 109	<i>punctatus</i>	47, 144
<i>setiger</i> , n. sp.....	71, 109, 184	<i>pusillus</i>	46, 146
<i>smithi</i> , n. sp.....	99, 109	<i>savii</i>	146
<i>strigosus</i>	109	<i>stigmatosus</i>	47, 144
<i>umbraticus</i>	82, 84, 92, 98, 109	<i>aurinamensis</i>	195
<i>urbicus</i>	184	<i>venustus</i>	183
<i>varians</i>	92, 109	<i>virgatus</i>	46, 106
<i>virginiensis</i> , n. sp.....	98	<i>virginiensis</i>	149

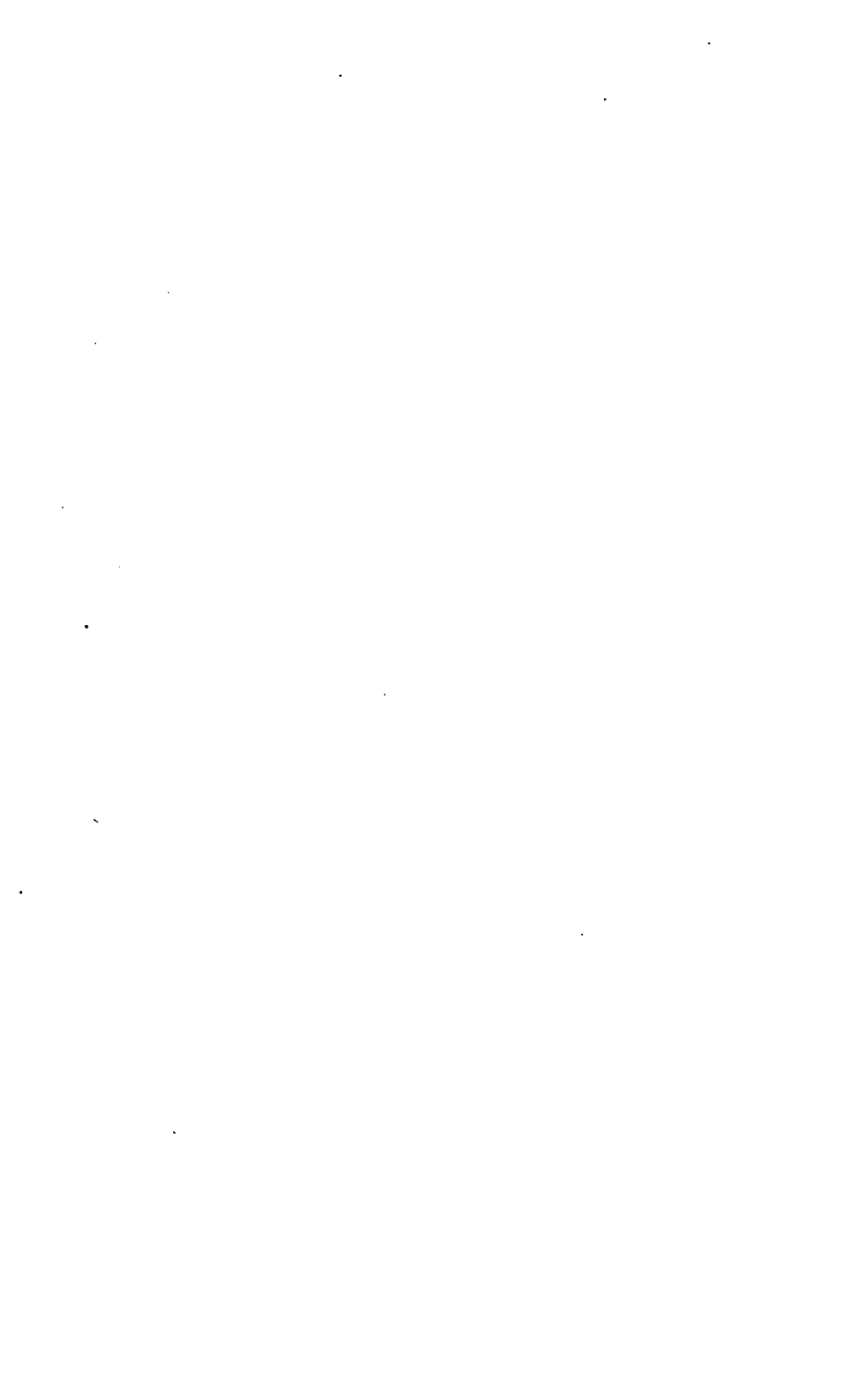
	Page		Page
<i>Læriulus</i>	140	<i>Lithobius</i> —	
<i>Lamycetes</i>	130	<i>trilobus</i> , n. sp.....	19, 21, 25, 92, 110, 134
<i>Latzelia</i> , n. g.....	161	<i>tuber</i> , n. sp.....	21, 23, 110, 185
<i>Leiosoma</i>	136, 154, 186	<i>tyrannus</i> , n. sp.....	43, 44, 111
<i>Leptodesmus</i>	122, 141, 159	<i>underwoodi</i> , n. sp.....	102
catalogue of species.....	122	<i>vorax</i>	44, 89
<i>borealis</i> , n. sp.....	183	<i>xanti</i>	22, 28
<i>couloni</i>	87	<i>xenopus</i> , n. sp.....	101
<i>hispidipes</i>	74	<i>Lysiopteralidae</i>	120
<i>placidus</i>	107	<i>Lysiopteralum</i>	120, 155
<i>varius</i>	96	catalogue of species.....	120
<i>Linotenia</i>	126, 142, 167	<i>eudasum</i>	81, 83, 145
catalogue of species.....	126	<i>lactarium</i>	73, 81, 90, 96, 145, 183
<i>bidens</i>	91	<i>lineatum</i>	145
<i>bothriopa</i>	76	<i>Mecistocephalina</i>	166
<i>branneri</i> , n. sp.....	76	<i>Mecistocephalus</i>	124, 125, 166
<i>chionophila</i>	98, 109, 197	catalogue of species.....	129
<i>fulva</i>	91, 98, 109, 184	<i>foveatus</i>	184
<i>gracilis</i>	126	<i>punctifrons</i>	88
<i>parviceps</i>	98	<i>Meinertia</i> , nom. n. g.....	142, 167
<i>robusta</i>	76, 91	<i>Mesocanthus</i>	166
<i>ruber</i>	91, 109, 126	<i>Mesoiulus</i>	157
<i>Lithobiidae</i>	21, 32, 128, 163, 164	<i>Monopoda</i> , new subclass.....	153, 162
list of.....	32	<i>Monops</i>	143, 165
<i>Lithobius</i>	164	<i>Myriapoda</i> —	
tables of species.....	21, 43	classification of.....	153
catalogue of species.....	128	catalogue of.....	117
<i>atkinsoni</i> , n. sp.....	42, 101	<i>Nannolene</i> , n. g.....	57, 62, 120, 157
<i>aztecus</i>	22, 26	<i>burkei</i> , n. sp.....	57, 61, 62, 131
<i>bilabiatulus</i>	21, 23, 110, 185	<i>cubensis</i> , n. sp.....	86
<i>branneri</i> , n. sp.....	79, 82, 84, 85, 93	<i>Nannops</i> , n. subg.....	167
<i>cæcus</i> , n. sp.....	84	<i>Nemasoma</i>	118, 138, 157
<i>cantabrigensis</i>	85, 93	catalogue of species.....	118
<i>cardinalis</i> , n. sp.....	20, 21, 25, 110, 134	<i>minutum</i>	90, 106, 146
<i>celer</i> , n. sp.....	79	<i>sayanum</i> , nom. nov.....	145
<i>clarus</i>	22, 29, 43	<i>stigmatosum</i>	106
<i>eigenmanni</i> , n. sp.....	42	<i>Nemasominae</i>	156, 157
<i>elattus</i> , n. sp.....	100	<i>Neolithobius</i>	29, 33, 44, 129, 164
<i>forficatus</i>	22, 27, 110, 185, 200	table of species.....	43
<i>glabratus</i>	200	<i>clarus</i>	43
<i>holzingeri</i> , n. sp.....	72, 185	<i>latzeli</i>	43
<i>howei</i> , n. sp.....	19, 22, 26, 110, 133, 182, 185	<i>mordax</i>	44
<i>jowensis</i>	110	<i>terreus</i>	44
<i>juventus</i> , n. sp.....	30, 44, 93, 111	<i>transmarinus</i>	43
<i>kochii</i>	21, 22, 101	<i>tyrannus</i>	44
<i>latzeli</i>	43, 102	<i>vorax</i>	44
<i>leptopus</i>	44	<i>Newportia</i>	166, 176
<i>lundii</i>	85, 92	<i>longitarsis</i>	88
<i>minnesotæ</i> , n. sp.....	19, 21, 22, 182	<i>Nodopyge</i>	139, 156
<i>mordax</i>	22, 29, 44, 80, 146, 185, 200	<i>Notiphilides</i>	167
<i>multidentatus</i>	22, 30, 80, 85, 93, 103, 111	<i>Octoglena</i>	117, 137, 154, 187
<i>obesus</i>	42, 100	<i>bivirgata</i>	187
<i>ordipes</i> , n. sp.....	80	<i>Odontodesmus</i>	141, 160
<i>pinguis</i> , n. sp.....	79	<i>Odontopyge</i>	139, 156
<i>politus</i>	22, 28	<i>Odontotropis</i>	159
<i>poridens</i> , n. sp.....	19, 21, 24, 79, 82, 85, 92, 100, 110, 133	<i>Oligasplina</i>	161
<i>pullus</i> , n. sp.....	19, 21, 24, 110, 134	<i>Oligaspis</i>	161
<i>rex</i> , n. sp.....	102	<i>Ommatolulus</i>	138
<i>similis</i> , n. sp.....	85, 92	<i>Ommatophora</i>	133, 186
<i>spinipes</i>	146	<i>Oniscodemus</i>	161
<i>stejnegeri</i> , n. sp.....	190	<i>Oniscomorpha</i>	154, 161
<i>sulcipes</i>	199	<i>Ophiulus</i>	138
<i>terreus</i>	44		
<i>transmarinus</i>	43, 80, 146		

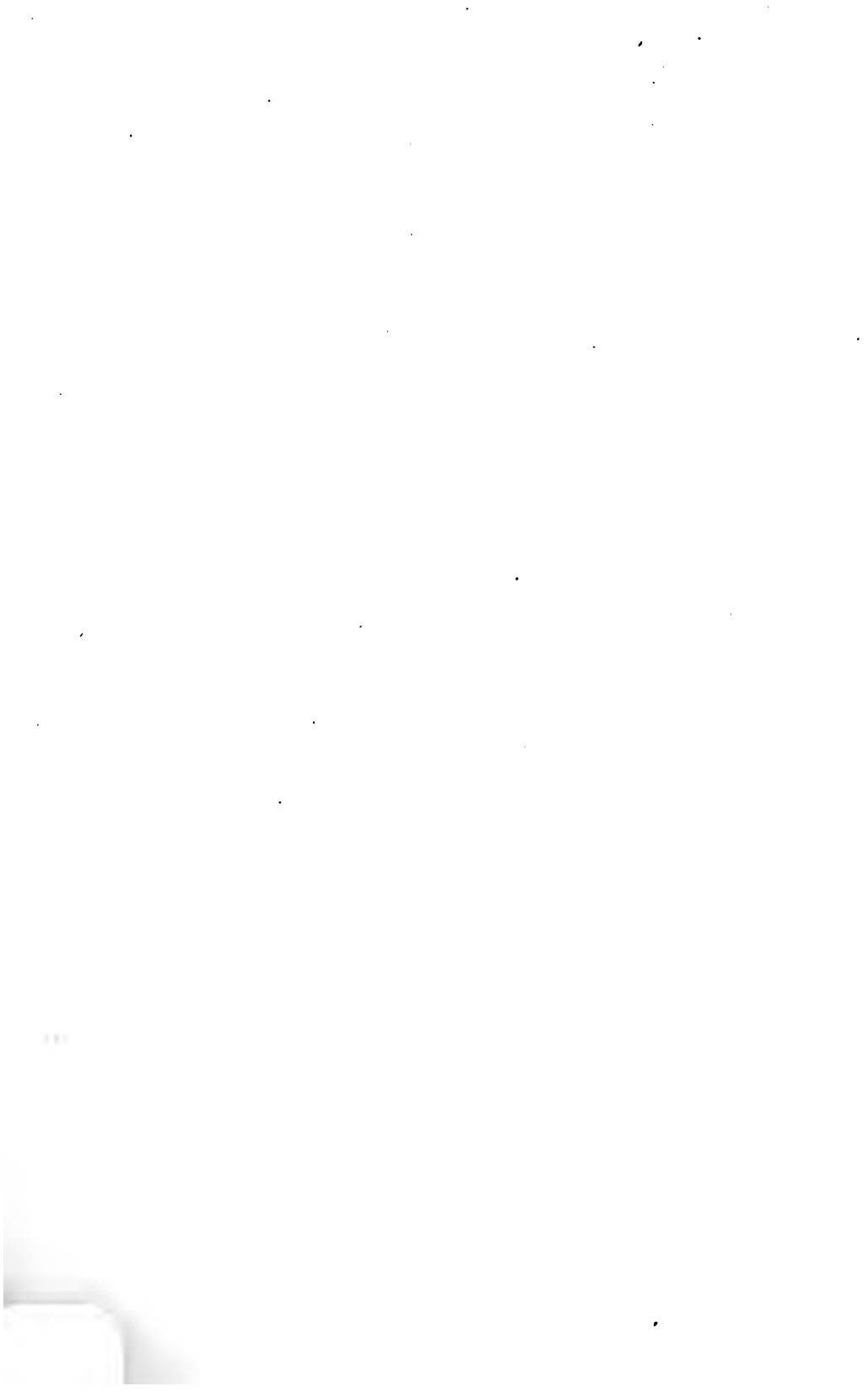
	Page.		Page.
Opisthemea.....	127, 128, 142, 169, 170	Platydesmus.....	117, 137, 155, 187, 188
crassipes.....	147	catalogue of species.....	117
postica.....	147	californicus.....	189
Orphneus.....	107	lecontei.....	73, 95, 189
brasiliensis.....	88	rosea.....	189
Orthomorpha, nom. n. g.....	159, 196	Platyrhacus.....	87, 141
beaumonti.....	196	Platyulus.....	136, 154, 186
coarctata.....	196	Plutoninae.....	165, 168
dasys.....	197	Plutonium.....	165, 168
flavolimbata.....	196	Podochila, new superorder.....	153, 162
gracilis.....	197	Polyænus fasciculatus.....	146
karschi, n. sp.....	196, 197	Polydesmia.....	141
pekinensis.....	196	Polydesmidæ.....	67, 121, 159
Orya.....	167	Polydesminæ.....	141, 159
Otoeryptops.....	166, 176	Polydesmoidea.....	159
Otoestigma.....	165, 171	Polydesmus.....	120, 122, 123, 124, 160
Oxydesmus.....	160	catalogue of species.....	121
Oxyurus.....	122, 141, 159	angelus.....	197
		branneri, n. sp.....	37, 91, 98, 182
Pachyulus.....	138	canadensis.....	37, 82, 146, 182
Pachyurus.....	160, 197	coarctatus.....	196
Paromopus.....	61, 119, 139, 157	corrugatus.....	107, 152
Paradesmus.....	122, 123, 159, 196	couloni.....	87
coarctatus.....	36	dasys, n. sp.....	36, 122
dasys.....	122, 197	fraternus.....	197
evides, n. sp.....	74, 123, 184, 201	glaucescens.....	37, 146, 151, 182
gracilis.....	36	granulatus.....	146, 151
poeyi.....	87	inconstans.....	36, 37
vicarius.....	87	minor, n. sp.....	74, 108
Parajulius.....	156, 157	moniliaris.....	36, 151, 182
Parajulus.....	52, 63, 138, 157	nitidus, n. sp.....	67
list of species.....	61	otomitus.....	197
catalogue of species.....	119	pennsylvanicus.....	37, 146, 151, 182
cæsius.....	73	pinetorum, n. sp.....	74
canadensis.....	55, 96, 150	serratus.....	36, 37, 38, 98, 109, 146, 151, 182, 184
castaneus, n. sp.....	54, 63, 181	spectabilis.....	196
diversifrons.....	181, 183	testi, n. sp.....	36, 108
ectenes, n. sp.....	34	vicarius.....	196
ellipticus, n. sp.....	53, 132, 181, 183	Polylepis, nom. n. g.....	160, 197
furfifer.....	35	abstrusus.....	197
impressus.....	52, 96, 105, 144	Klugii.....	197
obtectus, n. sp.....	56, 64	Polyxenidæ.....	124, 162
oregonensis.....	35	Polyxenus.....	124, 162
pennsylvanicus.....	34, 54, 81, 85, 90, 96, 105	fasciculatus.....	76
rugosus, n. sp.....	70, 105	Polyzonina.....	186
varius, n. sp.....	56, 64	Polyzonidæ.....	117, 154, 186
venustus.....	96, 105, 183	classification of.....	186
zonatus, n. sp.....	35	Polyzonium.....	136, 154, 186
Paupoda.....	124, 153, 162	Polyzonium.....	117, 136, 154, 186
Paupodidæ.....	124, 162	rosalbum.....	95, 105, 117, 187
Paupodine.....	162	Pristodesmus.....	154
Paupopus.....	124, 162	Pselaphognatha.....	124, 162
catalogue of species.....	124	Pseudodesmus.....	155
lubbockii.....	76, 109	Pseudojulus, n. subg.....	52, 56, 63, 138
Pectiniungula, n. g.....	113, 167	Pseudolithobius.....	33, 129, 164
americanus, n. sp.....	113	Pseudotremia.....	120, 121, 140, 158
eximia.....	113	catalogue of species.....	121
Petaserpes.....	117, 137, 154, 186	carterensis.....	107
Piestodesmus.....	137, 154, 155, 188	cavernarum.....	107
Platops lineata.....	145	vudli.....	73, 150
Platydesmia.....	136, 187		
Platydesmiens.....	136	Reasia.....	120
Platydesmii.....	187	spinosa.....	145
Platydesmina.....	154, 155, 186, 187	Rhachidimorpha.....	160
Platydesmini.....	187	Rhacis.....	159

	Page		Page
Rhacophorus.....	141, 160	Scolopendra—	
magnus, n. sp.....	88	viridicornis.....	116
Rhinocrinus.....	48, 65, 156	viridis.....	147, 172, 174
Rhisosoma.....	158	woodli.....	78, 92, 100, 110, 172, 174
Rhoda.....	165, 171	Scolopendridæ.....	127, 164, 165, 170
Rhysida.....	127, 143, 166, 171, 176	synopsis of.....	168
celer.....	176	list of.....	180
Schendyla.....	125, 167	Scolopendrinæ.....	65, 168, 170
nemorensis.....	113	Scolopendropsinæ.....	165, 166, 168, 176
perforata.....	41, 77, 84, 148	Scolopendropsis.....	128, 166, 176
Schizotarsia.....	164	helvola.....	147, 152, 177
Scoliopterus.....	126, 142, 167	Scolopocryptops.....	128, 166, 176
bothriopus.....	84	catalogue of species.....	128
gracilis, n. sp.....	84, 92, 126	calcaratus, n. sp.....	133
robustus.....	76	californica.....	179
ruber, n. sp.....	20, 82, 84, 126, 132	georgicus.....	99, 147, 177
Scolopendra.....	127, 129, 165, 171	gracilis.....	177, 179
catalogue of species.....	127	lanatipes.....	179
alternans.....	88	longitarsis.....	88
audax.....	173	melnerti.....	177
azteca.....	198	mersi.....	177
brandtiana.....	173	nigridius, n. sp.....	82, 84, 85, 92, 110, 177, 179
byassina.....	173	sexspinosus.....	78, 84, 92, 99, 110, 147, 152, 177, 184
californica.....	174	spinicaudus.....	177, 178
carinipes.....	174	Scoterpes.....	121, 158
castaniceps.....	175	catalogue of species.....	121
copeana.....	175	bollmani.....	106
crudelis.....	172, 175, 199	lunatus.....	106
dehaani.....	114, 172	wyandotte, n. sp.....	106
elongata.....	173	Scotophilus.....	142, 167
forficata.....	27	Scutigera.....	33, 130, 164
galapagoensis, n. sp.....	115, 116	flavipes, n. sp.....	200
gigantea.....	173	forceps.....	31, 80, 111, 148
gigas.....	116	lincei.....	32
gracilis.....	166	Scutigera.....	3, 133, 130, 164
heros.....	78, 100, 172, 175, 198	Seytonotus.....	122, 141, 142, 160
heros pusinatica.....	175	catalogue of species.....	122
hirsutipes, n. sp.....	198	cavernarum, n. sp.....	68, 108
inæquidens.....	174	granulatus.....	108, 186, 182, 184
longicornis.....	174	lævicollis.....	146, 151
longipes.....	175	nodulosus.....	151
lutea.....	173	scabricollis.....	146, 150
macracanthus, n. sp.....	114	setiger.....	91
marginata.....	147, 173	Sellista.....	130
maya.....	198	forceps.....	31
microcanthus, n. sp.....	114	Siphonophora.....	154
morsitans.....	147, 172, 173, 197	cubana.....	86
morsitans cærulescens.....	174	portoricensis.....	86
newporti.....	173	Siphonophoridae.....	136, 186
nicaraguensis, n. sp.....	198	Siphonophorinae.....	154
ornata.....	173	Siphonotus.....	154
otomita.....	198	Sphæriodesmianæ.....	141, 159, 161
pachypus.....	100, 172, 174, 198	Sphæriodesmus.....	124, 161
parva.....	147, 174	pudicus, n. sp.....	75
placæ.....	173	Sphærotheria.....	142
planiceps.....	173	Sphærotheriinae.....	141, 161
platypoides.....	173	Sphærotherium.....	161
platypus.....	173	Spirobolinae.....	156
polymorpha.....	175	Spirobolus.....	48, 120, 156
prasina.....	116	list of species.....	60
pulchra.....	173	catalogue of species.....	118
punctiventris.....	147, 174	americæ-borealis.....	105
sanatille, n. sp.....	199	annulatus.....	145
subspinipes.....	114, 172	bahamensis, n. sp.....	190, 192
		californicus.....	50

	Page.		Page.
Spirobolus —		Stenotænia	142
<i>callipus</i> , n. sp.....	190, 191	Stigmatogaster	167
<i>caudatus</i>	190, 193	Striaria n. g.....	83, 121, 158
<i>dugesii</i> , n. sp.....	190, 194	<i>granulosa</i> , n. sp.....	83, 91
<i>gracilis</i> , n. sp.....	190	Striarina	157, 158
<i>hebes</i> , n. sp.....	50, 65, 95	Strigamia	125, 126, 142
<i>heilprini</i> , n. sp.....	202	<i>bothriopa</i>	91
<i>marginatus</i>	48, 73, 95	<i>fulva</i>	91
<i>pensacola</i> , n. sp.....	49, 65	Strongyloidesmus	160
<i>sanctæ-lucæ</i> , n. sp.....	112	Strongylosoma	122, 159
<i>spinigerus</i>	51, 95, 145	<i>pallipes</i>	144
<i>surinamensis</i> , n. sp.....	190, 192	<i>poeyi</i> , n. sp.....	70, 87, 196
<i>uncigerus</i>	49	Stylolæmus	167
<i>zonipus</i> , n. sp.....	190, 194	Syngnatha	144, 153
Spirocyclistus	139	classification of.....	163
Spiropæus	139		
Spirostrephon	120, 121	Theatops	127, 142, 165, 168, 169
<i>cæcioannulatus</i>	73, 150	<i>crassipes</i>	84, 147
<i>lactarius</i>	145	<i>posticus</i>	92, 99, 110, 147, 170
Spirostreptina	156	<i>spinicaudus</i>	78, 92, 170
Spirostreptus	60, 118, 139, 156	Trachelodesmus	141, 142, 160
list of species.....	60	Trachyulus	139, 156
catalogue of species.....	118	Trematoptychus	166, 171
<i>californicus</i>	50	Trichopetalum	120, 121, 140, 158
<i>clavipes</i>	150	Typhlogena	136, 166
<i>montezumæ</i>	95	Typhloiulus	138
<i>nutans</i>	150		
<i>otomitus</i>	195	Unguipalpi	164
<i>surinamensis</i>	195		
Stemmiulus	60, 137, 157	Zephronia	161
Stenodesmus	160	Zygonopus	121, 158
Stenonia	122, 141, 160		
<i>maculata</i> , n. sp.....	87		

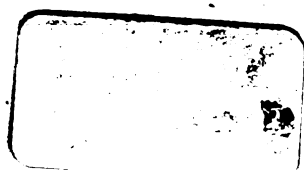








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